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BRUCELLOSIS

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Brucellosis today presents a most perplexing problem to the medical profession. In spite of the excellent work done by competent investigators, most physicians do not acknowledge the widespread prevalence of the disease. Several factors are responsible for this. No practical and accurate diagnostic procedures avail in most cases. The picture varies to such an extent that clinical diagnosis is almost impossible without definite knowledge of the presence of Bang's disease in the community. The lack of adequate treatment deprives us of the use of the therapeutic test. Thus one may readily understand how the condition might be widespread without its prevalence being recognized.

Judging from the possible sources of infection, it is not unlikely that brucellosis may be quite common. Evans[1] estimates that between 6 and 10 per cent of the cattle excrete the organisms in milk. On a recent survey made in St. James Parish by the U. S. Department of Agriculture, 19.5 per cent of the cows showed positive reaction for Bang's disease. From personal observation of the disease in cattle, I believe the incidence to be much greater. The infection is not confined to any particular class of society. All raw milk drinkers, users of dairy products and handlers of raw meat, including housewives, may be exposed to the disease. The possibility of transmission from human excreta must be considered; to these vast groups must be added the cases of probable congenital infection; but the most common source of infection is milk.

The true state of affairs is more apparent to the country practitioner who is able to observe the entire community and to determine the actual sources of infection from the family cows. The author has on many occasions had cattle examined to prove the source of infection when diagnosis by clinical and laboratory methods was impossible, and has even learned from the "family history" that an old cow had repeatedly aborted ten or more years previously.

The present laboratory tests are inadequate for the diagnosis of brucellosis. The agglutinins do not develop in the majority of cases in the acute or chronic phases. The organism has been recovered from patients who did not show the presence of specific agglutinins.[2] We are apt to lose sight of the true concept of the agglutination test. Fundamentally, it is not a diagnostic procedure, although it may be used as such under certain circumstances. It is in reality, an index of the response of the host to establish immunity against a given infection. It is of definite value in cases of acute self-limiting diseases in which either immunity is established, or the host succumbs. In a chronic prolonged illness such as brucellosis or Bang's disease, in which the host is unable to develop sufficient antibodies to overcome the infection, it is apparent that we cannot always expect a positive agglutination.

The skin test is not sufficiently conclusive as a basis for diagnosis. The majority of patients tested show a positive reaction.

This merely indicates the widespread prevalence of the organism and not active infection. Since the reaction is allergic it may be positive in a patient who has been drinking milk containing the killed organisms. In an active case, the degree of the reaction does not indicate the severity of the infection, and the absence of reaction following the intradermal test does not exclude the possibility of infection. Positive blood cultures have been obtained in patients showing negative skin tests[14] and negative skin reactions have been noted in patients definitely known to have been drinking infected milk.

The opsonocytophagic index does afford some indication of the extent of immunity present, but the technic is complicated and is subject to error and the use of this procedure is not possible for many physicians. A negative opsonocytophagic index and a positive skin reaction in the presence of suggestive symptoms constitute a diagnostic picture of some significance.

It is generally admitted that the only positive laboratory diagnosis consists of the isolation of the organism. This procedure, however, is generally speaking, beyond the facility of the general practitioner.

Unlike other diseases, brucellosis has been shown to cause definite change in every organ and tissue of the body. This accounts for the marked variation in the clinical picture. The disease does not necessarily begin with an acute onset. Numerous investigators have definitely shown that former ideas regarding the onset and duration of the infection must be discarded. It is impossible to classify the various types of fever. The disease must be considered as having an acute and chronic phase. In the acute phase the hyperpyrexia may be present for one day or may continue for weeks. A patient may establish sufficient immunity following the acute phase to overcome the infection completely, the condition remaining undiagnosed. There are no pathognomonic signs or symptoms.

The chronic phase may continue for years without an acute exacerbation, or acute phases may occur at irregular intervals, lasting for several days or more with subsequent improvement. In the chronic phase, the patient is usually unaware of the presence of a low grade fever. The usual complaints are weakness, vague pains such as an obscure headache, arthritis, myalgia, neuralgia, epigastric distress, cough, mental depression, insomnia and many other less commonly noted symptoms. Weakness and fatigue are generally present with one or more of the above complaints. Positive findings on physical examination are usually absent. Loss of weight is not commonly noted but careful check of temperature may show the presence of a low grade fever. Low blood pressure is frequently present. In these cases fatigue is usually attributed to the hypotension and the true diagnosis is missed.

Subclinical cases have been noted in which the patient was found to be having a low grade fever without complaints. Development of symptoms at a later date makes the diagnosis more apparent.

The disease may exist in a chronic form without the presence of fever. These cases are not usually diagnosed and the patient is considered to be neurotic or neurasthenic.

Brucellosis frequently occurs as a concurrent infection. In these instances the clinical picture is obscured to such an extent that diagnosis is most difficult. Adequate supportive treatment may assist the patient in overcoming the Brucella infection without its presence being discovered. An individual may harbor the organism without active infection for a period of years, the loss of immunity following an acute illness, pregnancy or surgery resulting in a subsequent low grade fever.

To illustrate the various points mentioned, the following cases are briefly reported:

CASE No. 1

In July 1942, a white male, aged 22, complained of headache and fatigue. He admitted having had high fever of one day's duration two weeks previously. Physical examination revealed a temperature of 100° and a chronic suppurative otitis media said to be present since infancy. A mastoidectomy was performed in 1929. A specimen of blood was sent to the laboratory. Two days later

the patient was confined to bed with a temperature of 103°. The fever subsided the following day and has not recurred to date. The laboratory report showed a positive agglutination for *B. abortus* in a dilution of 1-320. The family cow was found to have Bang's disease.

This case shows the short duration of the acute illness. No specific therapy was given. There is a probability that the otitis media may be of Brucella origin. During the patient's infancy the father was obliged to dispose of his cattle because of the prevalence of abortions in them. Cody[3] reports suppurative otitis media in brucellosis and involvement of the mastoid cells in Brucella infections has been reported by Oppenheimer, Dennis and Badeen.[4]

CASE No. 2

In June 1939, a white female, aged 16, complained of fatigue and low grade fever of six weeks' duration. Physical examination revealed no important findings. Agglutinations were negative for the Brucella and typhoid groups. The Mantoux was likewise negative. Supportive treatment resulted in no improvement. In September 1939, the patient suddenly developed chills and fever which persisted for six days, with a maximum temperature of 105°. Following this acute phase, agglutinins for *B. abortus* were found to be present in dilutions up to 1-350.

There was no past history of a previous fever indicating that the onset was insidious. The patient was given a stock vaccine and remained perfectly well until January 1943. At this time she complained of fatigue, nervousness and insomnia. The temperature was found to be 99°. Many other cases in the series suggest that an insidious or mild onset is quite common. Simpson[5] states that "less than 10 per cent of patients with chronic brucellosis have experienced previous acute febrile illness compatible with a diagnosis of acute brucellosis." This case also illustrates that the acute phase stimulated the formation of agglutinins not present during the chronic phase.

CASE No. 3

In November 1937, a white female, aged 35, gave a history of a hyperpyrexia of three weeks' duration. The temperature was normal for three weeks after which the fever returned for a three week period. The patient was persistently treated for malaria. In studying the case it was found that the agglutination was positive for *B. melitensis* but negative for *B. abortus*. The family cow was checked for Bang's disease and found to be a positive reactor. The high fever subsided without specific therapy and the patient was later given a stock vaccine. Excellent health continued until May 1942, when the patient complained of marked weakness, vague pains and low grade fever. The blood showed negative agglutinations for both abortus and melitensis and an opsonocytophagic index of 3.8 organisms per leukocyte. These findings indicated loss of immunity.

This case illustrates that cross-agglutination cannot be depended upon. Had *B. abortus* been used alone the case would not have been diagnosed. It likewise shows the long period over which the infection can remain dormant. The second illness was probably a recurrence and not a reinfection, since no raw milk was used after the patient's first experience with the disease.

CASE No. 4

In 1937, a white male, aged 31, suddenly became acutely ill with chills and high fever. The patient was hospitalized and treated for what was apparently acute pyelonephritis. The fever subsided in three weeks. Since this acute illness the patient has been a semi-invalid in spite of excessive gain in weight, the only complaint being marked weakness. Physical examination was essentially negative. All laboratory data were normal except for a persistent pyuria which did not respond to any of the excellent urinary antiseptics. The patient was examined by several competent physicians, all agreeing on a diagnosis of neurosis. There was no recurrence of the fever. In 1942, the patient was checked for a possible Brucella infection. The agglutination was positive for *B. abortus* in a dilution of 1-80 and he had a marked local and systemic reaction following the skin test. The family cow was found to be a positive reactor for Bang's disease.

This case definitely shows that fever is not a necessary symptom. The urinary infection was apparently of Brucella origin. Extreme weakness, causing disability, was present in several other cases. It is the most commonly noted symptom of brucellosis and is a decisive factor in the economic importance of the disease.

CASE No. 5

In 1942, a white female, aged 34, complained of an atrophic arthritis, involving the arms and especially the wrists and hands. There was also a periodic low grade fever and weakness. No apparent focus of infection could be found. The condition did not respond to the usual therapeutic

measures, including the use of gold intravenously. A careful review of past illness revealed that the patient suffered a high fever in 1936. A clinical diagnosis of estivo-autumnal malaria was made at the time, although no plasmodia were found. The patient was given quinine and the temperature returned to normal in six days. Occasional low grade fever and the joint pains dated from that illness. Further investigation yielded the following data: agglutinations—negative; skin test—positive; opsonocytophagic index—negative. The milk used by the patient was obtained from a dairy later found to be heavily infested with Bang's disease. A special Brucella vaccine was administered with excellent results. The patient has shown definite general improvement, with subsidence of the swelling of the involved joints.

Two other uncomplicated cases of arthritis were seen. Joint pains are frequently present in brucellosis. All such cases not showing a definite focus of infection should be investigated for a possible Brucella infection. A suggestive past history and associated symptoms greatly aid in the diagnosis.

CASE No. 6

In 1941, a white male, aged 38, was returned from hospital for continuation of artificial pneumothorax procedure. In spite of the fact that he had had a satisfactory collapse since 1940 and had been free of acid-fast organisms since April 1941, he suffered a continuous low grade fever. There was clinical evidence of improvement, such as marked gain of weight and disappearance of cough and expectoration. The cause of the fever could not be attributed to the pathology of the lungs. The patient was checked for brucellosis and the following data obtained: agglutinations—negative; skin reaction—positive; opsonocytophagic index—negative.

This case illustrates a concurrent infection of brucellosis, clouding a definitely diagnosed tubercular infection. Brucellosis is frequently associated with tuberculosis either as a concurrent infection or in mistaken diagnosis.[6] Cough and fever are common findings in brucellosis. With the high incidence of Bang's disease it is not surprising to find brucellosis in the most likely host, the tuberculous subject.

CASE No. 7

In December 1938, a white male, age 6, was seen with a hyperpyrexia of 104°. The temperature was normal in the mornings, during which time the patient was quite comfortable and wanted to leave the bed. At noon the fever would rise to 105° and return to normal by midnight. A slight cough was present during the elevation. The leukocyte count was 22,250. The roentgenologist reported a small cloudy area—probably a pneumonitis—at the base of one lung. After six days the fever subsided and the patient made an apparent recovery. Small doses of sulfanilamide were administered for several days. Clinically the illness did not resemble a pneumonia.

Several months later the patient was found to be suffering from a low grade fever that has persisted to date. His gain in weight has been excessive and he has had no complaints. At one time the fever was attributed to diseased tonsils, at another, to acute rheumatic fever. There have been no cardiac involvement or joint pains. The agglutination for *B. abortus* was negative and the skin test definitely positive. Tonsillectomy was performed in 1939 without change in the course of the temperature. In 1941, the patient was confined to bed with a fractured limb, without the slightest variation in the course of the low grade fever.

The family history was suggestive of brucellosis. The mother has had a periodic low grade fever with an atrophic arthritis and weakness for several years. The case was definitely so diagnosed. Improvement followed the use of a stock vaccine. The father has had an obscure low grade fever of unexplained origin. A sister and a brother have had recurrent periods of fever although all appear to be in excellent health. The family milk supply was obtained from a herd known to be infected with Bang's disease.

This case illustrates the pulmonary involvement seen in acute brucellosis. A similar condition was discovered in another child who had a recurrent hyperpyrexia. Bogart,[7] Lafferty and Philips[8] have demonstrated the pulmonary changes in Brucella infections. The presence of fever in other members of the family is to be expected since there is a common source of infection. This has been noted in many family groups.

CASE No. 8

In July 1942, a white male, aged 30, gave a history of having a marked edema of the right side of the face and right ankle of two months' duration. He complained of associated pain, especially in the right leg. Headache and fatigue were likewise present. The case was studied in a clinic without diagnosis. Physical examination revealed the edema as stated above. Blood pressure was 105/70. Temperature was 99.3. Urinalysis was negative. Sedimentation index 12 mm. in one hour. The leukocyte count was 7,400 with a normal differential. In 1939, the patient was found to have suffered a low grade fever on examination for life insurance. An industrial examination in 1940 again revealed the presence of fever. On these occasions the patient was robust, had no complaints

and was apparently in sound health. With the past history of an obscure fever, the case was studied as one of possible Brucella infection. Agglutinations for abortus and melitensis were negative. The opsonocytophagic index showed an average of less than one bacillus per leukocyte. The reaction following skin test was definitely positive. The edema eventually subsided but the periodic low grade fever and fatigue have persisted, the temperature at times ranging as high as 102°.

This case was apparently of the subclinical type. Loss of immunity could be attributed to overwork. The edema was probably of neuritic origin. This condition has been noted by Hughes and also by Harris.[9] Edema was observed in four other suspected cases.

CASE No. 9

A white male, aged 44, was observed and treated for a period of ten years, during which time he persistently complained of fatigue and vague pains. These symptoms dated back to an attack of "supposed malaria" 20 years previously. The malaria was clinically diagnosed and lasted for three weeks in spite of quinine therapy. The patient appeared to be in excellent health. Physical examination by many competent physicians revealed only a hypotension. No improvement resulted from symptomatic treatment. The patient was persuaded to record his temperature for a five minute period at various times of the day. He was found to be running a low grade fever with a maximum temperature of 100°. He was not conscious of the fever which apparently had been present for years. The agglutinations for abortus and melitensis were negative. The skin reaction was positive. The opsonocytophagic index was negative. The milk supply was obtained from a herd of which 60 per cent were positive reactors for Bang's disease. No plasmodia could be found.

This case demonstrates the obstinate chronicity of brucellosis and the necessity of adequately recording the temperature. Brucella patients are frequently unaware of the presence of fever. In 1942 I had occasion to treat a case definitely diagnosed. This patient was likewise known to have been drinking infected milk. The fever persisted for six months going at times as high as 103°. The patient was never confined to bed and apparently experienced no ill feeling from the elevated temperature. The history of malaria as in the case reported has frequently been noted and will be discussed later. The above case is probably the most common variety of brucellosis.

CASE No. 10

In 1941 a white female, aged 42, gave a history of having a low grade fever subsequent to a pregnancy in 1937. The fever was continuous with a maximum temperature of 100°, associated with weakness, muscular and joint pains. The past history showed two acute illnesses; typhus fever, clinically diagnosed in 1920, and acute tonsillitis with high fever in 1932. The patient was hospitalized in 1938 for diagnostic purposes. All laboratory data at this time were essentially normal. The possibility of chronic brucellosis was suggested. In 1940, the family cow had been found to be a positive reactor for Bang's disease. There was presumptive evidence that the infection was present in the barnyard since 1930. The patient does not recall having a low grade fever prior to 1937. Following the use of a stock bacterin, the temperature remained normal with clinical improvement for seven months, the fever and symptoms then returned. The patient's mother has been having a low grade fever with multiple complaints since an attack of pneumonia in 1940. X-ray examination showed no residual disease of the chest. The patient's husband has had a periodic low grade fever with fatigue for two years. These cases have been investigated and no other apparent diagnosis is evident.

Two of the cases illustrate apparent loss of immunity, one following pregnancy, the other following pneumonia. The pneumonia could not be attributed to the brucellosis. In five other cases suspected of being Brucella infections fever was noted following delivery without evidence of puerperal or urinary infections. Bang's disease is known to flare up under similar circumstances in the cow.

CASE No. 11

In 1937, a white female, aged 24, was seen for prenatal care. At about the seventh month of gestation, the patient developed uterine contractions and was advised to go to a hospital where incubator facilities would be available. A dead fetus was delivered and the patient was found to have a four plus Wassermann. A later check showed the Wassermann, Tschernogowbou and precipitin to be negative. Wassermann reactions on the husband and other members of the family were negative. Several months later, a continuous low grade fever was noted accompanied by joint pains and weakness. The agglutination was positive for melitensis and negative for abortus. The skin reaction was positive. The Wassermann was again reported positive. The family cow was discovered to have

Bang's disease. The possibility of a false Wassermann reaction was considered. Treatment was instituted for brucellosis which could have accounted for the abortion. A stock vaccine was administered and the fever continued for four months. The family moved from the community and the patient was not seen again until 1940 at which time she was again found to be seven months' pregnant. Both the Kolmer and Kahn tests were positive. The child was given the benefit of the doubt and the patient received anti-luetic treatment until term. Following delivery, complete laboratory data were obtained. The first check showed the Wassermann and Kahn to be doubtful and the Kline weakly positive. Four days later the Wassermann was unsatisfactory, the Kahn was negative and the Kline was positive. Two days later all three were negative. The opsonocytophagic index showed less than 40 per cent of the cells with marked phagocytosis. According to Huddleson's interpretation, this would indicate active infection.[10] The agglutination was positive for abortus in 1-40. *B. melitensis* was not used. The patient also showed a positive agglutination for *B. proteus OX 19* in a dilution of 1-320.

The Wassermann, Kahn and Kline tests on the child were negative. Agglutination for *B. abortus* was likewise negative. No growth was found on blood culture.

Six months following delivery the Wassermann and Kahn were positive. Agglutinations for *B. abortus* and *B. proteus OX 19* were negative. The patient continues to suffer a low grade fever with backache and fatigue.

The author suggests as an original observation, the possibility of false Wassermann reactions in chronic brucellosis. False reactions are known to occur in many other diseases, a subsequent check usually revealing the error. Brucella infections of a chronic nature commonly present vague complaints that may be attributed to lues. In the case mentioned the inconsistency of the reports corresponds to the characteristic recurrency of brucellosis. Neither the mother nor the child showed any clinical evidence of lues.

Four other cases have been suspected of having false luetic reactions. Three have been definitely diagnosed as brucellosis. In all of the cases there is sufficient evidence to doubt the presence of lues, when thus accompanied by suggestive histories and symptoms of Brucella infections.

Abortions have been occasionally noted in patients suspected of or known to have brucellosis. The agglutination for *B. proteus X 19* in a high dilution was noted in another ambulatory patient having brucellosis. It was also noted in three other patients having a hyperpyrexia of four days' duration. The illnesses could not be distinguished from brucellosis. Calder[11] has called attention to the presence of proteus agglutinins of high titer in some cases of Brucella infections, sometimes exceeding those of the Brucella agglutinins.

These reports have been selected from a series of 25 cases definitely diagnosed and some 30 clinically diagnosed. A much larger group, tentatively diagnosed, is under observation. Definite diagnosis is based on laboratory evidence of infection such as the presence of agglutinins or a negative opsonocytophagic index with a positive skin reaction. The source of infection has been determined in many of the cases. Clinical diagnosis was made in the chronic cases, based upon suggestive symptoms extending over a period of years. A low grade fever was present in all of the cases and the source of infection was actually known in the majority. Past history of an acute illness of unknown or dubious origin aided in the diagnosis. In all of the cases, other likely illnesses were ruled out wherever possible. The duration of illness is an important factor in the chronic cases. In all instances, the patients have been under observation for several years or longer. The recurrence of symptoms, whether acute or chronic, is suggestive of brucellosis.

The most difficult type of brucellosis is the chronic, obscure manifestation. Physical examination does not show sufficient justification for the symptoms and the patient is usually branded as a neurotic or neurasthenic. Inasmuch as these patients have reasons for their complaints, the psychosomatic relationship must be considered. With the mental depression accompanying brucellosis, it is not unlikely for the patient to have a tendency toward neurosis. The clinical picture depends upon the tolerance of the individual to withstand the added discomforts of a chronic illness. The infection has been known to accentuate the symp-

toms of a menopausal syndrome and to aggravate a mild premenstrual tension.

In observing the disease in the cow and in the patient, I have noted sufficient evidence for possible diagnosis in individuals who have never sought medical attention. Knowing of a definite source of infection, the case of a white male, aged 36, was studied. He admitted a hyperpyrexia of five days' duration four years previous to examination. The patient had been hospitalized and studied without diagnosis. Since this acute illness, he further admitted having occasional periods of low grade fever with vague pains and fatigue which he did not consider justified medical attention. A search for possible Brucella infection was made with the following results. Agglutinins for *B. abortus* and *B. melitensis* were present in a dilution of 1-20. The opsonocytophagic index indicated doubtful immunity. The skin test showed a marked local reaction that persisted for six weeks and eventually terminated with a slough. Other investigators[1] have concluded that the infection may exist in a form so mild that the subject is unaware of the illness.

It is impossible to estimate the incidence of the disease. Foshay[12] states that surveys conducted in endemic areas indicate that approximately 10 per cent of these population groups have been invaded by Brucella. Many patients have probably made complete recovery following the acute illness. The subsequent finding of the disease in cattle occasionally throws light on a previously undiagnosed illness. In 1937, a white male, 27 years of age, was treated for a hyperpyrexia of two weeks' duration. There were no significant findings on physical examination. The leukocyte count was 5,500 with a normal differential. No plasmodia could be found. All agglutinations were negative on several occasions. The patient made an uneventful recovery without definite diagnosis. There have been no subsequent illnesses or suggestive symptoms. Several years later the family cow was found to have Bang's disease. Although this later discovery of a likely source of infection does not constitute proof of diagnosis, it is of some significance. This case is not included in the series or considered as a Brucella infection. Drs. Angle and Algie[13] "feel that the great majority of cases of acute undulant fever have gone unrecognized and untreated to complete recovery."

Case reports from many states indicate that the disease is widespread throughout the country. The situation undoubtedly varies in different sections depending upon the extent and duration of Bang's disease in animals. In those areas where the disease is less widespread one may expect more acute infections and consequently less difficulty in diagnosis. In the areas where diseased cattle are prevalent, brucellosis exists in a more chronic form. This probably accounts for the difference of opinion regarding diagnosis and treatment.

The medical history of this community is quite suggestive. Years ago this section was flooded with "supposed malaria." Quinine was a household article and atabrine was sold in the grocery stores. It is a significant fact, even noticed by the laity, that this so-called malaria has completely disappeared. Druggists report that both quinine and atabrine are now dead stock. Many of the Brucella patients give a history of having had malaria, of a duration of six weeks or in some cases as long as several months. The promiscuous use of quinine both by the physicians and the patients themselves casts a strong doubt on the accuracy of the diagnosis. The fact that the high fever has disappeared and that today we have a marked prevalence of obscure low grade fevers with symptoms suggests that the condition may have been brucellosis. Blood smears were not generally examined. Many of these patients have been checked for malaria but no plasmodia have been found. The occasional case of malaria noted has been of the tertian variety and has offered no therapeutic problem.

Space does not permit the detailed discussion of treatment. It is impossible to evaluate the efficiency of therapy when one considers that the acute phase is self-limit-

ing and may be of only several days' duration. The cases generally diagnosed are those showing positive agglutinations. The prognosis of the disease depends upon the individual's ability to establish sufficient antibodies to overcome the infection. Many accomplish this without the aid of specific therapy. Clinical observations indicate that the development of immunity varies more in brucellosis than in any other disease. The situation will not be understood nor accepted until more studies are made regarding the clinical immunology. In this section the use of stock vaccines has not proved satisfactory. It has been noted that those cases showing specific agglutinins respond better to vaccine therapy. This too must be considered as doubtful as these patients show indications of establishing immunity without the aid of a bacterin. Use of the sulfonamides has not been successful although supportive treatment is of some assistance.

CONCLUSIONS

1. The prevalence of brucellosis is a subject of controversy among physicians.

2. In endemic areas the disease is undoubtedly widespread in a chronic form.

3. The disease is best observed in the rural sections where the sources of infection are known.

4. The present laboratory procedures are inadequate for diagnosis in most cases and one should resort to clinical means.

5. Brucellosis is one of the most protean of diseases. An original diagnosis is rarely made.

6. Certain characteristics of obscure illnesses suggest the possibility of brucellosis.

7. The situation varies in different sections depending upon the extent and duration of the disease in animals.

8. A more thorough understanding of the clinical immunology is necessary.

9. Specific therapy is not satisfactory.

REFERENCES

1. Evans, Alice: Chronic brucellosis, J. A. M. A., 103:665, 1934.

2. Smith, D. T., and Poston, Mary A.: Some unusual cases of brucella infection, Trans. Clin. & Climatological Assoc., 1937.

3. Cody, C. C., Jr.: Brucellosis in otolaryngology, Arch. Otolaryng., 23:441, 1936.

4. Oppenheimer, A., Dennis, E. W., and Badeen, M.: Involvement of the mastoid and granulopenia in brucella infection, Pract. Oto-rhino-laryng., 1:305, 1938.

5. Simpson, Walter M.: Brucellosis; undulant fever, Bull. New York Acad. Med., 17:592, 1941.

6. Purriel, P., Piaggio, A. A., and Risso, R.: Brucellosis and tuberculosis, Arch. Urog. de Med., Cir. y Especialalid., 19:401, 1941. abstr. J. A. M. A., 119:298, 1942.

7. Bogart, F. B.: Pulmonary changes in undulant fever, South. Med. J., 29:1, 1936.

8. Lafferty, R. H., and Philips, C. C.: Pulmonary changes in patients suffering from malta fever, South. Med. J., 30:595, 1937.

9. Harris, Harold: Brucellosis (Undulant Fever) Clinical and Subclinical, New York, Paul B. Hoeber, Inc., 1941. P. 286.

10. Huddleson, I. Forest: Brucellosis in Man and Animal, New York, The Commonwealth Fund, 1939. Pp. 339.

11. Calder, R. M.: Brucella, pasteurella tularensis, and proteus agglutinins in chronic brucellosis, J. Bact., 41:593, 1941.

12. Foshay, Lee: The laboratory diagnosis of undulant fever, Am. J. Clin. Path., 10:176, 1940.

13. Angle, Fred E., and Algie, William H.: The treatment of acute and chronic brucellosis, J. Kansas Med Soc., 41:233, 1940.

14. Singewald, M. L.: Brucellosis with positive blood cultures and negative allergic skin tests; two cases, New York State J. M., 41:1766, 1941.

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CLINICO-PATHOLOGIC CONFERENCE*

THE NEW ORLEANS GRADUATE MEDICAL ASSEMPLY

Dr. L. C. Chamberlain (Presiding): I am sure all of you are like all of us; we enjoy a break in regular routine of our staff meetings and the privilege of enjoying a good clinico-pathologic conference. We are going to have that sort of break tonight. This conference will be presented by Dr. Howard T. Karsner, Professor of Pathology, Western Reserve University School of Medicine, and Dr. Louis Hamman, Associate Professor of Clinical Medicine, Johns Hopkins School of Medicine, after the first case is read.

Dr. Chamberlain then read the first case history abstract which follows:

ABSTRACT OF CLINICAL HISTORY OF CASE 1

C. M., a white male, 48 years old, a garage mechanic, was admitted to Lakeside Hospital with the chief complaint of pus in the urine and dysuria. Family history is not contributory. Married for 28 years, his wife has borne four children and has had one miscarriage. In childhood, he had varicella, measles, mumps and pertussis, but denied having had gonorrhea, syphilis or other in-

*Read before the New Orleans Graduate Medical Assembly, New Orleans, March 15-18, 1943.

fectious disease at any time. He had been vigorous and well until 11 years ago, when after the extraction of several "abscessed" teeth, he was discovered to have diabetes.

The diabetes has been poorly controlled and he has had numerous boils. Four years ago he bumped his left foot and has had a large ulcer on the plantar surface ever since. At about the same time, he noticed the onset of a diarrhea which has gradually grown worse. He reported painful parasthesias of the foot at about that time and began to drink alcoholics in considerable quantity to control the pain. Three months before admission he began to lose weight and had two or three drenching night sweats per week. For two months before admission he had occasional fainting spells on assuming an upright position. A week before he entered he began to have pain and burning on urination and saw that his urine was cloudy and white. During the last month he lost 40 pounds in weight.

On admission to the hospital, where he stayed 87 days before his death, he was well developed but poorly nourished and edentulous. His temperature was 37.7° C., pulse 82, respirations 18 and blood pressure 100/75. Head and neck were normal save for Argyll-Robertson pupils and arteriosclerosis of the fundi of the eyes. The chest was emphysematous and there was costovertebral tenderness, more marked on the right; otherwise, chest and abdomen were not noteworthy. There was a small inflamed mass on the left thumb; the legs showed many pigmented scars and on the sole of the left foot was an ulcer, 10x5 cm. in area and 5 mm. deep. The gait was uncertain. Reflexes were normal except for absent knee and ankle jerks. Vibratory sense was diminished below the level of the pelvis and the legs and feet were anesthetic.

During the first two months the diabetes was readily controlled; thereafter there were periods of marked glucosuria. He had three to seven loose foamy fatty stools per day, not controlled by paregoric or other drugs; during the last week of life the diarrhea was described as terrific. His weight, which 11 years before admission was 250 pounds, dropped to 100 pounds at the end. The loss of weight in the hospital was only slowly reduced, with a diet of from about 2000 to 3000 calories supplemented by brewers' yeast, crude liver extract and pancreatic enzymes. About 10 days before death, large decubiti developed on buttocks and flanks.

The rectal temperature fluctuated between 36 and 38° C. until the forty-seventh day when for three days it reached a daily maximum of 40° C. This recurred on the sixty-third day and thereafter there were occasional elevations of about the same degree.

The Kline microprecipitation test for syphilis was negative. The urine was usually acid, with specific gravity of 1.007 to 1.018. It contained albumin and often sugar. There were always many leukocytes, occasionally a few red blood cells, rare granular casts and many bacteria (colon bacilli by culture). There was anemia with counts at low as 2.7 million and 50 per cent hemoglobin. There was never a leukocytosis and the differential was normal. In the early days of his illness, the blood urea nitrogen was 24 to 26 mgm. per 100 cc. and the urea clearance was but 60 per cent of normal. A few days before death, the blood contained 8.7 mgm. calcium per 100 cc., 4.2 mgm. phosphorus, 12 units of phosphatase (5.5 to 6.3 units normal), 6 gms. protein with an albumin-globulin ratio of 1.01. The BUN was 110, creatinine 5.2, plasma cholesterol 50.5, glucose 628 and chlorides 80 milliequivalents. The duodenal contents were negative for amylase, lipase and trypsin. The 24 hour stools contained 14.05 gm. protein and 80 gm. fat, with an intake of 122 gm. protein, 80 gm. fat and 201 gm. carbohydrate. There were no parasites, ova or cysts.

Electrocardiogram was not abnormal. Roentgen studies showed normal stomach, increased motility of small intestine, negative excretory urograms. Films of the upper abdomen showed mottled and streaky areas of calcification to the right of the twelfth thoracic and first lumbar vertebrae, a position considered to be higher than would be expected for pancreatic calculi.

The patient became increasingly weak and died in respiratory failure.

Dr. Karsner: Before Dr. Hamman presents his discussion I wish to express my warmest appreciation to the committee that a man of Dr. Hamman's great distinction as a clinician should have been selected to be associated with me in this conference. I shall show photographs of this man clinically and then Dr. Hamman will proceed with his discussion of the points in the case and the diagnosis.

Slide—This is a photograph of the patient before he became ill. He was a big man physically, well nourished and heavily muscled. He weighed at that time 250 pounds.

Slide—This is a photograph of the x-ray film made during the later days of his illness. There are small shadows of considerable density in the upper part of the abdomen near the mid-line. The record presented to you indicated that our roentgen-

Fig. 1. Roentgenogram taken in life to show shadows of pancreatic calculi.

ologist thought these to be a little high in situation to be shadows of pancreatic calculi.*

Slide—This photograph was taken after death and shows the marked degree of emaciation.

Slide—This photograph shows the extensive decubiti and cellulitis of the buttocks and flanks.

Dr. Louis Hamman: I think you are all familiar with the nature of these exercises. Dr. Karsner selected the cases to be presented on this occasion and sent me the summary you have just heard read and of which most of you have copies. From the evidence contained in these records, we are asked to predict what was found at autopsy. The pathologist then will demonstrate what really was found.

There are certain features of the patient's illness which are clearly defined in the summary. In the first place, he had diabetes, a fact discovered ten years before death. Further, we are told that the diabetes never was satisfactorily controlled. Therefore, we are not surprised to read that in the course of years, certain complications arose which occur frequently in diabetes especially when the disease is poorly controlled. At first, he developed furuncles, later the characteristic symptoms of peripheral neuritis, finally a deep ulcer on the sole of the left foot which never healed.

About the furuncles, we need say little; they occur frequently in diabetes and their relation to the disease is well known. When the infections are deep-seated and widespread, our therapeutic routine goes awry and control of the diabetes may become difficult.

About the neurologic symptoms, there is much to be said for they are unusual from a number of standpoints. In the first place, the severity of the symptoms is remarkable. Then again the character of the symptoms is noteworthy for they are the distinctive symptoms of involvement of the posterior sensory columns of the spinal cord. Therefore the patient had not only peripheral neuritis but also what has been spoken of as diabetic pseudo-tabes. Whereas mild forms of neuritis occur often in diabetes, involvement of the spinal cord is seen only rarely. I am greatly interested in the statement that the patient had Argyll-Robertson pupils. In medical literature, there are reports of the occurrence of Argyll-Robertson pupils in alcoholic neuritis and diabetic neuritis. However, I have never observed them in these conditions. Guided solely by my experience, I would conclude that the Argyll-Robertson is distinctive of syphilitic infection of the central nervous system for I have seen it only in this disease. Therefore it would be a satisfaction were we able to recall the patient and, by appropriate tests, verify this observation. Since we cannot do this, we must look upon this case as one of the unusual instances in which the Argyll-Robertson pupil has occurred with diabetic neuritis.

As a sequel to the diabetic neuritis, the patient developed a deep ulcer on the sole of the foot, which never healed. This is a replica of the perforating ulcer of tabes.

It was about a year before death that an entirely new group of symptoms came to

*Subsequent examination of the record of the case shows that this statement is not literally correct. The roentgenologist reported that the shadows were a little higher than is usually true of pancreatic calculi. He requested a subsequent examination but the condition of the patient did not warrant this.

the fore which progressed inexorably and finally led to the patient's death. The patient developed diarrhea, which grew steadily worse and during the last few weeks of life was described as terrific. The stools were large and full of fat. As a matter of fact, during the latter part of life, the patient discharged as much fat in the stools as was taken in by mouth and the cholesterol of the blood fell to a very low level. These observations demonstrate clearly that no fat was absorbed from the intestinal tract.

It is interesting to speculate upon the cause of this fatal diarrhea. Careful study of the stools, and of the digestive tract with the x-ray, exclude the possibility of an ulcerative lesion of the intestines being the cause. Such fatty diarrhea occurs in sprue, but none of the other symptoms of sprue were present in this patient. In children steatorrhea sometimes occurs when no satisfactory explanation for it can be found; rarely this condition is observed in adults. There is a very unusual disease of the intestinal wall which prevents the absorption of fat. However, none of these diseases seem to be at all a satisfactory explanation for the fatty diarrhea in the patient we are now discussing. Another explanation must be sought and this much more plausible explanation lies near at hand. It is well known that if the pancreatic ferments fail to reach the intestinal tract, digestion is seriously impaired and since the fats are not split, they appear in abundance in the stools. In the records, there is convincing evidence that the pancreas was diseased and its functions seriously disturbed. No pancreatic enzymes were found in the duodenal contents and the x-ray film demonstrated the presence of numerous stones in the pancreas. The roentgenologists were cautious and said that the stones were rather high for the pancreas. Nevertheless, I shall assume that they were in the pancreas for in other respects the picture is typical and the fact that there was impairment of pancreative function has already been pointed out.

Finally, it must not be forgotten that when the patient entered the hospital, he complained chiefly of urinary symptoms. The urine was found to contain a large amount of pus and the colon bacillus grew in cultures. Therefore, he had a severe infection of the urinary tract, no doubt cystitis, ureteritis and pyelitis. Although there was no evidence of serious impairment of renal function, still, under the circumstances, it is reasonable to assume that the infection had invaded the kidneys and produced pyelonephritis.

I have said that the chief function of the clinician at these exercises is to discuss the clinical data in such a way as to lead finally to a prediction of the anatomic lesions that underlie the symptoms. Let us now go on to the prediction. From the fact that the patient had diabetes, what anatomic lesion would we conclude must be present? We all know that diabetes is due to a disturbance of the function of the islands of Langerhans. Therefore, we look at once for some structural change in these islands. It is important to bear in mind the fact that although the islands of Langerhans lie scattered throughout the pancreas, they are entirely independent of the secretory part of the gland which manufactures the digestive ferments. In animals when the pancreatic duct is tied, the secretory portion of the pancreas is destroyed and the gland shrivels into a small fibrous mass. However, the islands of Langerhans persist uninjured and diabetes does not occur. Analogous conditions are observed in man. I recall an instance published by Winternitz many years ago. An infant had severe diarrhea at birth with fatty stools and died soon after. At autopsy no pancreas was found but in microscopical sections, a narrow band of tissue containing a large number of islands of Langerhans was discovered. Owing to the absence of pancreatic ferments, the infant had fatty diarrhea and soon died but since the islands of Langerhans were preserved, he did not have diabetes.

It may seem singular, yet it is true, that there is no accurate correspondence be-

tween the degree of diabetes observed during life and the anatomic changes found in the islands of Langerhans after death. In a large series of cases, the pathologist is unable to divide the cases into those which during life showed the symptoms of severe diabetes and into those which during life showed the symptoms of mild diabetes. As a matter of fact, the pathologist, basing his conclusions solely on the results of anatomic studies, cannot in all instances with certainty decide that patients did have or did not have diabetes during life. The changes that are commonly found in the islands of Langerhans are degenerative changes in the cells often accompanied by sclerosis of the islands. On the basis of autopsy reports, it is often stated that the commonest lesion found is chronic pancreatitis. This statement is confusing because the diagnosis of chronic pancreatitis is not a satisfactory diagnosis. Fibrous tissue formation in the pancreas would not affect the islands of Langerhans unless in the course of extensive scarring, a large number of the islands were destroyed. Interference with the production of insulin not infrequently occurs as a result of destruction of a large number of islands, and this process no doubt explains the not infrequent occurrence of diabetes in carcinoma of the pancreas. In my experience, fibrosis of the pancreas, even though it may be very extensive, is not usually accompanied by the symptoms of diabetes though occasionally it may be. Therefore, I think it is difficult in advance to predict exactly what changes in the islands of Langerhans may have been found at autopsy in this case. It is possible that many of the islands may have been destroyed by fibrotic changes in the pancreas but I think it is also likely that the islands themselves will show evidence of degenerative changes in the cells with death of the cells and replacement by scar tissue.

I think we are on safer ground in predicting the changes that occurred in the pancreas to explain the absence of pancreatic ferments in the intestinal tract. I have already said that I shall accept the evidence as demonstrating the presence of numerous stones in the pancreas. Unfortunately, we do not know why stones occur in the pancreas. I was very careful to see in advance what Dr. Karsner might have to say on this subject by looking up the matter in his textbook of pathology. He has only a brief paragraph on the subject in which he confesses to utter ignorance about the cause of pancreatic stones. Although we know nothing about the cause of pancreatic stones, we know something about the clinical manifestations that accompany pancreatic lithiasis. In the patient under consideration, we are altogether justified in assuming that one of the stones must have obstructed the common duct because this is the only explanation I can think of for the complete absence of pancreatic ferments in the intestinal tract. If this assumption is correct, then we may conclude further that the pancreas will show extreme scarring and will be much reduced in size. It would be an advantage if we could ascribe the disturbance due to the suppression of the secretory function of the gland and the disturbance due to changes in the islands of Langerhans to the same cause. One might assume that changes in the pancreas leading finally to the formation of stones, may have started many years before and that the disease of the pancreas, leading finally to the formation of stones, was also the cause of diabetes. Were we to attempt to do this, we would then be obliged to postulate the presence of some disease which had led to extensive fibrosis of the pancreas which had destroyed a large number of the islands. The subject of what is spoken of as chronic pancreatitis is an interesting one though not clearly defined either anatomically or clinically. There are, no doubt, many conditions to which scarring of the pancreas is secondary, just as many conditions precede the development of cirrhosis of the liver. There is a clinical picture not well known which seems clearly to be associated with extensive fibrosis of the pancreas. All the patients I have seen with this condition have been strongly alcoholic. The symptoms consist of severe attacks of pain in the upper abdomen which recur over many

years and lead gradually to digestive disturbance followed by emaciation. These patients are often operated upon for ulcer, for gall stones, and so on. These operations give no relief and often patients are operated upon a second and third time in the hope that release of adhesions may benefit them. If a bit of the pancreas is removed for examination at operation or if the patient finally dies and comes to autopsy, the examination of the pancreas shows the presence of extensive fibrosis with changes in the epithelium of the pancreatic ducts. The epithelium of the ducts becomes metaplastic and grows up in projections that finally occlude the ducts. When the ducts become occluded, the glandular structure which the duct drains becomes greatly distended and finally ruptures. When the distended gland ruptures, digestive ferments are poured out with the digestion of the surrounding tissues and fat necrosis. The attacks of pain are probably due to this mechanism. In the course of years, the scarring of the gland may become extensive. Occasionally the patients develop a mild form of diabetes but usually they do not. Rich and Duff in their studies directed to find an explanation for the occurrence of acute hemorrhagic pancreatitis, have described these changes in detail. I do not mean to imply that these changes are the cause of stone formation in the pancreas because observation certainly does not demonstrate such an association. However, when stones are present in the pancreas, extensive scarring of the gland usually occurs. Some cases of pancreatic lithiasis are accompanied by diabetes but most of them are not.

Finally, if we gather together the implications of this discussion, the clinical prediction of the anatomic findings would be as follows: (1) Pancreatic lithiasis with obstruction of the pancreatic duct, atrophy and scarring of the gland; (2) diabetes mellitus with degenerative changes in the islands of Langerhans; (3) peripheral neuritis with degeneration in the posterior columns of the spinal cord; and (4) cystitis, pyelitis and, in all probability, pyelonephritis.

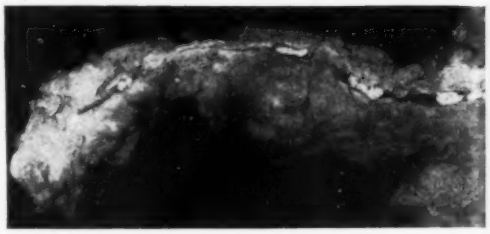
Dr. Karsner: Before presenting the diagnosis in this case, I insist that I be given an opportunity to defend myself and pathologists in general. I wish to say in all seriousness that pathologists have one great advantage over clinicians, in that the pathologists have direct access to the material under study. They do not have to determine the consolidation of the lung by indirect means, such as percussion and auscultation. They see the lung and feel it and get directly at it. They do not have to determine cardiac valvular lesions through a stethoscope and by other indirect means. They see and feel the valves. This matter of direct access is a great advantage to the pathologist. It does not give him the right to assume that he is superior in any way to his clinical colleagues. There are occasions when that attitude may have been adopted but rarely, if ever, is it justified. I have traveled about the country a great deal and have met doctors from various medical schools. I have known a good many Hopkins men and have a high respect for a great many of them, as I have for Dr. Hamman, but I also insist that in such a place back in the sticks as Western Reserve University, we have some fine clinicians and when they say "Argyll-Robertson pupils" they are Argyll-Robertson pupils* A pathologist is, generally speaking, the subject of attack by various clinical men, and that becomes especially evident if he, in a few weak years, may have written a book. I am gratified to find that Dr. Hamman agrees with one statement in my book. Perhaps that is the only one but I hope he may find others satisfactory.

Dr. Hamman has made reference to the excellent work of Rich and Duff on acute

*Subsequent examination of the record shows that the pupils were small but unequal, that they failed to react to light but did to accommodation, and that there was slight photophobia. The test with atropine was not applied. With this exception, the pupils correspond to the criteria given by Merritt and Moore: The Argyll-Robertson pupil: An anatomic-physiologic explanation of the phenomenon, with a survey of its occurrence in neurosyphilis, Arch. Neurol. & Psychiat., 30:357, 1933.

pancreatic necrosis. With the tendency of certain pathologists to be caustic, I would say that the subject was not exhausted in Baltimore. There are numerous other studies and hypotheses. Neither from the physiologic nor the anatomic aspects have the course and pathogenesis of acute pancreatic necrosis been definitely proved. In passing, let me refer to the view that this lesion is not primarily inflammatory, and should not be called pancreatitis. There are true forms of acute diffuse pancreatitis but they are a clearly distinguishable lesion pathologically. Without further recrimination I shall read the anatomic diagnoses which have been so accurately predicted by Dr. Hamman. The diagnoses are as follows: Pancreatic lithiasis, with obstruction of main pancreatic duct, and fibrosis and atrophy of pancreas; fibrosis of islets of Langerhans consistent with the clinical diagnosis of diabetes mellitus; slight bronchopneumonia, bilateral; fibrosis and demyelinization of peripheral nerves of lower extremities; focal demyelinization of dorsal columns of spinal cord; acute intrahepatic cholangitis; acute hyperplasia of spleen; decubitis ulcers and cellulitis of back, sacrum and buttocks; multiple ulcers of legs; acute laryngitis; chronic cholecystitis with cholelithiasis; acute pyelonephritis with abscess formation, superimposed upon chronic pyelonephritis; acute thrombophlebitis of tributaries of renal veins; perinephric abscesses on left; acute and chronic ureteritis, bilateral; hypertrophy, dilatation, acute and chronic inflammation of urinary bladder, with cystitis cystica; healed non-deforming endocarditis of tricuspid, mitral and aortic valves; slight fibrosis of testis; melanosis of large intestine.

Slide—I have put on this chart the diagnosis, with particular reference to the principal systems involved. You will note involvement principally of pancreas, kidneys and central nervous system. There was pancreatic lithiasis, obstruction of the duct, fibrosis and atrophy, fibrosis and hyalinization of islets. The kidneys showed acute pyelonephritis and chronic pyelonephritis.



2. Gross photograph of pancreas to show calculi in main pancreatic duct. Most of what appears to be pancreas is fat and connective tissue.

The nervous system showed focal demyelinization of dorsal columns of spinal cord and of peripheral nerves to lower extremities.

Slide—This is a photograph of the specimen of the pancreas taken postmortem and shows calculi in the main duct which are distributed widely along that duct. The structure that looks like pancreas is really largely fat and fibrous tissue with little parenchymal tissue remaining.

Slide—This is an x-ray photograph of the specimen to show the shadows produced by the calculi.

Slide—This is a photomicrograph of two islets of Langerhans surrounded by fibrous tissue, entirely devoid of parenchyma. Fibrosis and hyalinization are present in the islets. As Dr. Hamman has said, this change occurs in patients without diabetes but it is somewhat more frequent in those who are diabetic; it is not pathognomonic.

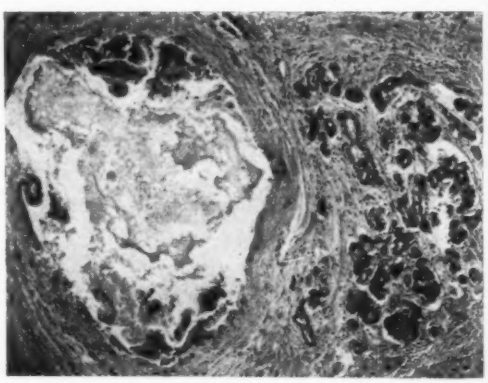


Fig. 3. Photomicrograph of pancreas to show dilatation of small duct and atrophy of parenchyma.

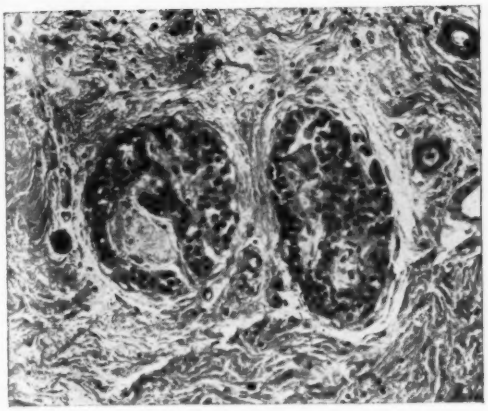


Fig. 4. Photomicrograph of pancreas to show fibrosis and hyalinization of islets of Langerhans.

Slide—This photomicrograph shows the dilated duct tributary to the grossly dilated main duct. The precipitate within it is amorphous and not in the form of the concrements often seen in the ducts of cystic fibrosis of the pancreas of childhood. The parenchyma is atrophic as would be expected in prolonged obstruction of pancreatic duct.

Fig. 5. Photomicrograph of section of spinal cord to show slight demyelinization of posterior column.

Slide—This low power photomicrograph shows slight focal demyelinization of the posterior columns of the spinal cord.

Slide—This photomicrograph shows fibrosis of the sciatic nerve. Special stains by the Weigert-Pal method showed scattered foci of demyelinization of both sciatics. This black and white picture shows a moderate fibrosis of the nerve.

Slide—This photomicrograph shows hyalinization of arterioles in the pancreas. Probably this hyalinization of arterioles is one of the anatomic manifestations of uremia. We observe it frequently in uremia and this patient had renal insufficiency because of his pyelonephritis.

As is often true, there was no anatomic explanation of the Argyll-Robertson pupils.

Pancreatic lithiasis occasionally occurs in patients with diabetes and it is often impossible to say which was primary. In this case, however, it seems evident that the diabetes which had been present for 11 years must have preceded the pancreatic lithiasis. I can see no reason for expecting that any change in the islets of Langerhans could have contributed to the development of the calculi.

Dr. Hamman accurately predicted the occurrence of pyelonephritis. In retrospect it seems possible that neither he nor our clinicians paid sufficient attention to the costovertebral tenderness.

The principal reason this case was selected was to draw attention to the disturbances in the nervous system that may accompany diabetes, a fact frequently overlooked. The presence of these manifestations does not necessarily mean syphilis or alcoholism. The literature on the subject is relatively scanty and there is no satisfactory explanation of the mechanisms which lead to these changes in the peripheral nerves and spinal cord.

Dr. Chamberlain read the abstract of the clinical history.

ABSTRACT OF CLINICAL HISTORY OF CASE 2

I. T., a white female, was admitted to City Hospital when she was 31 years old because of facial erysipelas. She was discharged cured three weeks later. At this time marked signs of disease of the central nervous system were discovered. From a sister, it was learned that the patient's father and all his brothers and sisters had died of "St. Vitus' dance" and the sister thought the patient's trouble

was of much the same order. In this generation there were four sisters, two perfectly well and one with epilepsy.

The patient had been wholly normal until she was 15 years old, when a coarse tremor of the hands was noticed. This gradually progressed to include other muscles; those of the trunk became weak, she lost control of her throat, developed difficulty in swallowing, lost the power of clear speech, her gait became unsteady and she walked with a wide base. Several years before her erysipelas she had been placed in a municipal infirmary because of inability to walk and to take care of herself. Indeed, she had to be secured when sitting up in a chair.

While convalescing from erysipelas, the records show that she was poorly nourished, asthenic and with virginal small breasts. The face was flaccid and smooth, the forehead wrinkled, the mouth open and drooling, and she looked much younger than her stated age. The pupils were normal in size and reactions, and the eyegrounds showed no changes. There were no pigment rings about the corneas. The tongue was tremorous and could not be fully protruded. All tendon reflexes were symmetrically and markedly hyperactive and there was sustained patellar clonus. Babinski and ankle reflexes were not demonstrable because of acquired clubbing of the feet. Cogwheel rigidity was excited by forcible extension of the extremities. The only sensory change was marked hyperesthesia of legs and feet. The spontaneous movements were a combination of static tremor and athetoid activity. Physical examination of thorax and abdomen was otherwise negative.

Generally she was euphoric, but during excitement, fearful and anxious. She appeared to understand questions and commands, but was limited in her response. When questioned vigorously or stimulated by physical contact, the tremor was exaggerated, she was unable to control herself at all, becoming rigid in all extremities, shaking violently and giving hoarse guttural cries.

After recovering from the erysipelas, her blood and urine were normal. No slit lamp studies or hepatic functional tests were made.

She returned to the infirmary where she gradually became worse and during the latter months of her life was bedridden and incapable of voluntary movements. She developed contractures of upper and lower extremities and toward the end decubiti over iliac crests, buttocks, trochanters of femurs, left ischial tuberosity and first metatarsal joint. She died of bronchopneumonia three years after her return to the infirmary, at the age of 34 years.

Dr. Karsner: (Motion picture). I show this motion picture, which is short, so that you may observe the facial grimaces, the expression of fear, the athetoid movements of the extremities, and the periods of rigidity.

Slides—Three lantern slides were shown to illustrate still photographs of facial expression, weakness of the patient who had to be supported by a nurse, and rigidity of the extremities.

Dr. Hamman: This is the story of an interesting and unusual disease of the central nervous system. As possible causes of the symptoms, we may at once exclude nearly all of the common and familiar diseases of the brain. The duration and the character of the symptoms show clearly that they could not have been due to a brain tumor, to an inflammatory disease of the brain such as abscess or diffuse encephalitis nor to scarring of the brain from some acute lesion that had subsided, for the symptoms were steadily progressive showing a slow but continuous extension of the disease. Therefore, we may conclude at once that the patient must have had one of the slowly progressing degenerative diseases of the central nervous system. As a matter of fact, we can further decide confidently upon the location of this degenerative disease. The lesions did not involve the pyramidal tract or any of the sensory tracts. The symptoms consisted chiefly of tremor with steadily increasing spasticity of the muscles. The portion of the brain that is affected in diseases characterized by tremor and muscular rigidity is the midbrain and more specifically the corpus striatum which comprises the caudate nucleus and the lenticular nucleus. It is now well established that this is the portion of the brain that is affected in Parkinson's disease and also in the Parkinsonian syndrome that follows encephalitis. In this particular instance, we can immediately exclude Parkinson's disease or as it is commonly called, paralysis agitans. This is a disease of late life and in the patient we are now considering, symptoms began when she was only 15 years of age. Nor are there any valid grounds for regarding the clinical manifestations as secondary to encephalitis. There is no history of an

acute illness preceding the onset of the symptoms; they came on very insidiously and gradually progressed; and the remarkable familial history cannot be disregarded. The two well-known diseases that often run a chronic course and are due to degenerative changes in the corpus striatum are Huntington's chorea and Wilson's disease. It seems to me that in this instance, the diagnosis lies between these two conditions and I think the chances favor Wilson's disease.

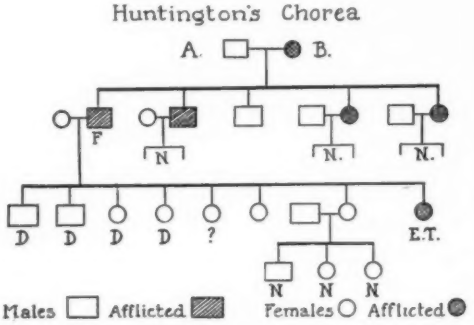
Huntington's chorea is an uncommon disease and yet one that is better known in this country than elsewhere. It is an inherited disease and apparently all of the cases that have been described may be traced to the descendants of about seven or eight ancestors. Huntington's chorea usually begins late in life and it begins as the name implies with incoordination of movements somewhat resembling the jerking movements of chorea. The disease may last many years and is usually associated with obvious mental deterioration. The family history in this case suggests an inherited disease if we conclude that the disease which occurred in so many members of the father's family was the same disease from which the patient suffered. If this interpretation is correct, it would be a point in favor of Huntington's chorea.

Wilson's disease, commonly spoken of as hepatolenticular degeneration, was first described by Wilson in 1912. It too is a rare disease but as we learn more about its clinical manifestations, more and more cases are being discovered. We know nothing about the cause of Wilson's disease. It seems not to be an inherited form of degeneration. It does occur in families but always in members of one family and not in ancestors further removed than the father and mother. When it occurs in this familial form, it is thought to be due not to inheritance but to some common cause to which the family living together is subjected. Apparently, it does not pass from one generation to another. Wilson's disease occurs at an earlier period of life and it is not uncommon in the teens. As a rule, the disease runs a much more rapid course than does Huntington's chorea. There are acute forms of not more than a few months' duration. The average duration of life after the onset of the disease is about four or five years. A few cases have been reported living from ten to 30 years. The characteristic symptoms at onset are tremor and not choreiform movements as in the case of Huntington's chorea. The striking peculiarity of Wilson's disease is that there is always necrosis of the liver followed by cirrhosis of the liver as well as degenerative changes in the corpus striatum. Clinically, the patients often show only nervous symptoms and cirrhosis of the liver is not discovered until the postmortem examination is made. On the other hand, some cases show only the manifestations of cirrhosis of the liver and nervous symptoms develop only late in the disease or not at all. Certain pigmentary changes in the eyes are thought to be characteristic of Wilson's disease and if these changes are found it is safe to make the diagnosis no matter what other symptoms may be present. However, these pigmentary changes are not always present and in their absence the diagnosis of Wilson's disease may be justified by consideration of the other manifestations. It is stated in the history of this patient that these pigmentary changes in the cornea, usually spoken of as Fleischer bodies, were not found but the note is added: No slit lamp studies were made. From my own experience, I can testify that it is not easy to see the characteristic golden-brown, granular pigment on the posterior surface of the cornea. In one patient, the ophthalmologist took pains to demonstrate them to me and yet I could not be sure that I could even then identify them. In this patient, there was no evidence of disease of the liver and yet, as I have said, the symptoms of cirrhosis of the liver may be entirely absent clinically and the disease be discovered only at autopsy. I lay great emphasis upon the fact that in describing the earliest symptoms of this nervous disorder, it is said that there was a coarse tremor of the hands.

In a word, most of the clinical manifestations seem to me to fit together better with the diagnosis of Wilson's disease than with the diagnosis of Huntington's chorea. The age of onset of the disease and the character of the earliest symptoms are certainly characteristic of Wilson's disease. As far as I know, Huntington's chorea never begins as early as 15 years. I must confess that the evidence pointing to a hereditary factor is in favor of Huntington's chorea. Therefore, the predicted anatomic diagnosis is degenerative changes in the corpus striatum and cirrhosis of the liver.

Dr. Karsner: Dr. Hamman made jocose reference to the insertion in the clinical history of the lack of performance of tests for hepatic function and the lack of examination by means of the slit lamp for the Fleischer rings. Without any claim to being a teacher, I have been employed in that capacity for over 30 years. Thus, I have given numerous examinations in the various schools with which I have been connected and also gave the examinations in the National Board of Medical Examiners for 12 years. I have conducted innumerable clinico-pathologic conferences in the hospitals with which I have been connected. I have not at any time in examinations or in clinico-pathologic conferences resorted to trickery. Trick questions in examinations are to be abhorred. Tricks in clinico-pathologic conferences are too easily exposed. The history which you have heard was that given at the clinico-pathologic conference on this case at Cleveland City Hospital, and was prepared by the clinical men in charge of the patient. The suggestion that slit-lamp studies be made was never followed out. I doubt very much that any study of hepatic function would have been valuable because of the fact that only when the liver is destroyed to a great extent are these tests to be thought of as dependable. Of course the absence of the Fleischer rings would not be a certain indication against the diagnosis of Wilson's disease. The neuropsychiatrists who had the opportunity of observing this patient made identically the same diagnosis as Dr. Hamman, which as you will see was incorrect.

Figure 6 below is made up from material given me only two days before this conference. You see the diagnosis at the top of the chart—namely, Huntington's chorea. Disease of the central nervous system has occurred in three generations. It is not to be asserted with positive assurance that these were all cases of Huntington's chorea, but as far as can be learned, the symptoms and signs were much the same as presented by our patient. The grandfather showed no disease but the grandmother was a victim of a comparable disease. In the next generation, which included the father of our patient, it is seen that one of his brothers and two of his sisters had comparable disease and that only one other member of that generation, a brother, escaped. In the patient's generation there were eight children, two boys and six girls. Two of her brothers and two of her sisters died in childhood. One of her sisters is married and has three children living and well. One other sister is normal, another sister is evidently the victim of epilepsy. The family of the grandmoth-



A. This family negative B Family originated in England Then in Virginia and later in Madison County, Ohio This woman had gross choreiform movements
F. Father of patient ("St. Vitus Dance") E T Patient
N. Not afflicted D Died in infancy
? Poliomyelitis in infancy Convulsions at 13. Now in hospital for epileptics No choreiform movements

Fig. 6. Chart of family history of patient, I. T. Prepared on basis of information collected by Dr. Edward Zucker of Cleveland City Hospital.

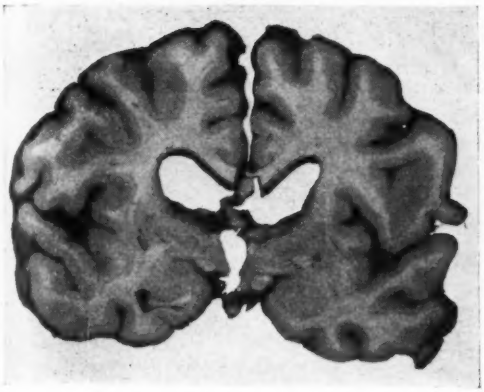


Fig. 7. Photograph of cross section of brain to show almost complete disappearance of caudate nucleus. The brain is small and the ventricles slightly dilated.

er originated in England but detailed story is not known. They migrated to Virginia and thence to Ohio.

Slide—These Kodachrome photographs show a cross section of normal brain as contrasted with a cross section of the patient's brain. The patient's brain is much smaller than the normal adult brain. The ventricles are enlarged and there was a good deal of fluid in the leptomeninges. You will see that the caudate nucleus shows a yellow discoloration in that small portion of it which is left. It is markedly reduced in size as compared with the caudate nucleus in the normal brain.

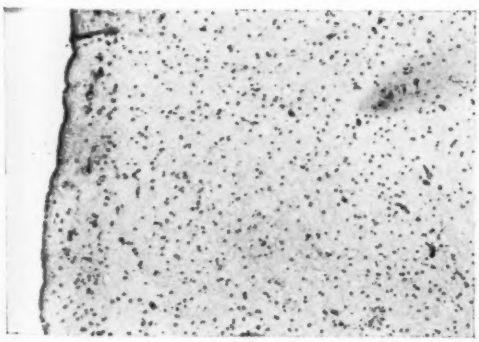


Fig. 8. Photomicrograph of caudate nucleus to show practically complete absence of ganglion cells.

Slide—This is another gross section to show the practically complete disappearance of the caudate nucleus and also illustrates the reduction in size of the putamen.

Slide—Here is another cross section of the brain to show essentially the same appearance.

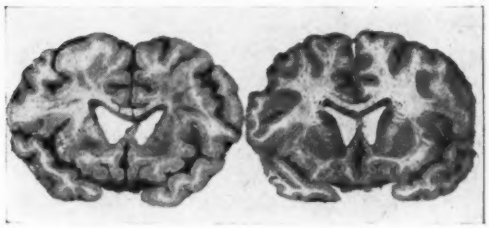


Fig. 9. Photograph of cross section of two brains at same level. At the left is the brain of another case of Huntington's chorea, with loss of caudate nucleus. Ventricles only slightly dilated and brain not reduced in size. At right is a normal brain for comparison.

Slide—In this photograph the substantia nigra is present and not altered.

Slide—This is a photomicrograph of the caudate nucleus to show practically complete disappearance of all the ganglion cells.

Slide—This is the gross photograph of the brain in another case. The brain is not materially reduced in size but the ventricles are somewhat enlarged. On the same slide for comparison is a section at the same level of a normal brain. The reduction in size of the caudate nucleus is striking.

We have excluded Parkinson's disease because in that condition the destruction of cells is principally the large cells of the paleostriatum and one of the main features is the involvement of the substantia nigra. Neither of these conditions is found in this case. In Wilson's disease there are similar degenerations of caudate nucleus and putamen, but again there are particular features in the frequent presence grossly of small cavities in these ganglia, and microscopically in the appearance of the large glia cells referred to as Alzheimer cells. Huntington's chorea affects the small cells of the neostriatum especially in the caudate nucleus, and the involvement of the

putamen is less striking. Grossly, the yellow color of the affected ganglia is usually found. Furthermore, atrophy of the cerebrum is much more likely to be observed in Huntington's chorea than in the other diseases although it may not be marked.

The patient had a general reduction in size of all organs of the body and that was true of the liver. Nevertheless there was nothing either grossly or microscopically to suggest the presence of cirrhosis of the liver. Sections of the eyes show no indication of the pigment observed in the Fleischer rings. The patients originally observed by Huntington came from a family in two small towns in England. It has been thought that practically all cases of Huntington's chorea are derived from this family. It is now doubtful that this is true because there are cases in this country which show no direct connection with Huntington's families. Furthermore, a considerable literature on the subject has been built up on the basis of cases observed in Sweden and on the continent. This is not to be interpreted as meaning that the disease, or the conditions which lead to its development, are not hereditary. They evidently are, as would be indicated in the history of this particular patient.

Of some interest in this case is the study given it by the patient's sister, a young woman not medically trained but widely read in the subject of these degenerative lesions of the basal ganglia. After her study she arrived at the conclusion that this was Friedreich's ataxia but as Dr. Hamman so ably pointed out, it is not a disease of the pyramidal tracts. The sister was of the opinion that the girl did not have Huntington's chorea because she thought there was no mental deterioration. That of course is prejudiced evidence. The motion picture and the entire story give plain indication of mental deterioration.

We think that we have demonstrated the diagnosis of Huntington's chorea in this case and I believe that when Dr. Hamman enters the discussion further, he will accept this view.

The reason for presenting this case in this conference was to draw attention to the group of diseases of the central nervous system which affect the basal ganglia especially. It is gratifying to all of us, I am sure, that it provoked the scholarly discussion given us by Dr. Hamman.

Dr. Hamman: Of course, after seeing this demonstration, no one can doubt that the real diagnosis is Huntington's chorea. The pathologist always has the last word in diagnosis and usually the final word. Dr. Karsner, if in my remarks, I inadvertently said anything that might have led to the impression that I implied that you were putting tricks over on us, I am deeply embarrassed and wish to offer my abject apology.

Dr. Karsner: It is generally stated that Huntington's chorea is first manifest in the fourth decade of life, but this is not invariably true. Certainly this case was unusual in beginning in adolescence. The age of onset played a considerable part in the clinical diagnosis in our hospital.

HISTORY OF AVIATION MEDICINE*

LEONARD K. KNAPP
NEW ORLEANS

I chose this subject because I think today we, as doctors, should all have a certain interest in aviation medicine and its special problems. I am sure that all the youth of today are interested in aviation, and the individual is few and far between who will not walk off the sidewalk while stretching his neck following a P-38, or look out of the window as a "flying fortress" lumbers along—it gives us all a thrill of one kind or another. We all wonder what the pilot feels, we wonder what it feels like to go tearing along at that terrific rate, we think of it in terms of daring, and in terms of dying. But did you ever stop to think of the physical condition, and the mental alertness of the interceptor pilot who spots enemy bombers 10 miles away? He has to

*Read before The History of Medicine Society, Tulane University, February, 1943.

plan his attack in less than a minute. Or the torpedo bomber who falls from 10,000 to 2500 feet or less in 15 seconds, aim his plane, and release the bomb; this man cannot be bothered with his ears popping. These men must be in top condition all the time and it is the duty of the flight surgeon to keep them that way. Incidentally, this term, flight surgeon, originated unofficially in England. As the story goes, a young American medical officer on arriving in that country was questioned as to whether he had a specialty. He replied, "flight surgeon." This mystified the officer, but it was finally decided that he should be taken to an airfield and given the opportunity to prove that he could fly. Fortunately he had learned to fly, and passed the test. It was not said whether he was given a practical examination in surgery.

The first official use of the term "flight surgeon" appeared in a memorandum to the Chief Signal Officer, U. S. Army, dated April 12, 1918, in which the term was officially given to those medical officers who have as their duty "Care of the Flier."

These problems of flight may seem far distant to us right now, but in the future everyone will be flying, and every doctor is going to have to hear and treat their problems. Maybe not every doctor, because I think that this will develop into another specialty for men in civil practice—it already is a specialty in army and navy medicine, and a relatively few doctors working in commercial aviation.

To get back where all this started is another matter. I find that 120 years before the airplane was invented in 1903 the first medical studies or experiments were made on flying. It was about this time that the first hot air balloons were being made, and after small ones ascended, larger ones were made and the people wondered whether it would be safe for a human. To test this they sent the first animals ever to fly—a chicken, a duck, and a sheep. These descended with no ill effects, and it was thought safe for a human. It was decided first to try a criminal; if he came back alive he was to have his freedom. It happened, however, a young, daring French nobleman named Pilatre de Rozier, volunteered, probably after many caustic and taunting remarks from a French mademoiselle who hoped to get rid of him in this manner. At any rate she was unlucky because he came back after an uneventful ascent on October 15, 1783. About two months later this same de Rozier noticed pain in his ears on another ascent. This is historic as the first reported ill-effects of flight, and is still important today.

Three years later, in 1786, the first reference to lack of oxygen appeared in the literature. In that year a technical "Handbook of Aeronautics" contained the following statements, speaking of an ascent: "The spirits are raised by the purity of the air, and rest in a cheerful composure. In an ascent all worries and disturbances disappear as if by magic due to the change from hot, putrid, and impure air to cool, pure air impregnated with the invigorating aerial acid." Today there is some dispute about this "aerial acid" theory, a few of the J. Kierans and F. P. Adams think it might have something to do with a mild oxygen lack.

In 1862 a couple of men, Glaisher and Coxwell by name, ascended to the remarkable height of 29,000 feet. Glaisher noticed he could not see well, and his hearing was fading, next his legs and arms became paralyzed. He had the presence of mind to grasp the valve rope in his teeth and as they descended his senses gradually returned to normal. This gives the first picture of severe oxygen lack due to altitude.

The first physician to devote his entire time to the study of the medical problems of aviation was Paul Bert, of France, who after many years of study, published in 1878 a book of some 1200 pages describing his findings. He was the first to realize the true cause of the changes with which balloonists were troubled. Soon after this Tissandier, a famed French meteorologist, Croci, and Sevel became interested in balloon ascents; they went to Bert for advice on the necessary precautions that should be taken. He advised them to take some oxy-

gen with them, and devised containers for it so that it could be used. In this advice he made just one mistake—he told them not to use the oxygen until they felt the need of it, because their supply was limited. This mistake proved to be a fatal one, because man's memory and judgment are defective when working under this oxygen deficiency. As a result, the oxygen was never used. This same story accounts for many deaths even today. Tissandier's classic description of the ascent follows:

"I now come to the fateful moments when we were overcome by the terrible action of reduced pressure. At 22,900 feet torpor seized me. I wrote nevertheless—though I have no clear recollection of writing. We were rising. Croci is panting. Sevel shuts his eyes. Croci also shuts his eyes . . . At 24,600 feet the torpor that overcomes one is extraordinary. Body and mind become feebler . . . There is no suffering. On the contrary one feels an inward joy. There is no thought of the danger of one's position; one rises and is glad to be rising. I soon felt myself so weak that I could not even turn my head to look at my companions. I wished to call out that we were now at 26,000 feet, but my tongue was paralyzed. All at once I shut my eyes and fell down powerless, and lost all further memory." When the balloon descended, Croci and Sevel were dead.

After this incident interest in the medical side of flying waned until after the Wright brothers invented the airplane in 1903. Even for several years after that the interest in flying was not high in this country and the Wrights had to take their invention to Europe to get governments interested in the addition of the airplane to their armed forces. One of the first of these was Germany. With the acceptance of the airplane as a military weapon, problems for the medical men began to multiply.

In the first place pilot selection became the most important job of the physician, and still remains so today. Again Germany led all others in setting up pilot standards. In 1915 aspecial medical service composed of the finest specialists in the country served in the German Air Force. The boys of that day who were training for the air force probably looked upon the physical much as most boys and pilots do today—as something that one had to pass—if they could conceal some minor defect that would throw them out, if they could memorize the eye charts, that was all to their advantage. That this was not the case was definitely proved by the English Air Force during this same period. At the start of World War I, the English had no pilot selection, in fact the only men they took for the air force were those unsuited for duty at the front, or those worn out by duties in the front lines who were sent back for a rest. This proved disastrous. At the end of the first year of war it was found that out of every 100 pilots killed, 90 died as a result of defect in the pilot, eight died from defective machines, and two died from enemy action. Besides this, 50 per cent of the flying Tommies developed nervous breakdowns or psychosis of some type. Can you imagine what shape our air force would be in today if a policy of selection such as this were allowed? At any rate, England quickly recognized her mistake. A medical research laboratory was established, and pilot selection began to be carefully controlled on the basis of findings by this laboratory. As a result, the 90 per cent of deaths due to defective pilots dropped to 20 per cent in two years, and to 12 per cent in three years.

I wish to digress here for a moment, because I think this authority on the part of a doctor of saying who is to fly, and who is not to fly is something that needs examining. If ever a doctor needed to practice the art of medicine that we hear so much about, it is the flight surgeon. He stands in rather a unique position, I think. He must tell the Army pilot he is now a liability, not an asset, that his flying is dangerous to himself and to his colleagues; he must tell the beginner that he is mentally not suited for pilot material. In the one case he is taking the very bread and butter from a pilot's mouth, in the other he may be crushing a life long ambition. These situa-

tions tend to make the flight surgeon at least a feared, if not a hated man. He must have the personality and the push to make himself understood and liked by the men—he must be their medical advisor so that they will not try to hold any secrets from him. If any of you are examining pilots in the future, I think this relationship is a very important one to remember.

To get back to the story, we now come to the real development of aviation medicine as it was brought about in the United States. In July 1914 Colonel Samuel Reber reported to the Surgeon General's Office that there were several young officers desiring to enter the aviation section of the Army, and it would be necessary to give them physical examinations. On July 30, 1914, the examinations were made, the first officers being examined were Second Lieutenants F. J. Gerstner, 10th Cavalry, and F. T. Armstrong, C. A. C. Immediately after this the Army drew up a set of standard regulations for the physical requirements. These were original because there were no previous ones to base them on, and none could be obtained from abroad. At any rate the results of these regulations were a little surprising, because after having had them in effect for six weeks no applicant had been able to pass them. The standards were revised and the requirements lowered. It is interesting to note that up to this time no civilian aviators had ever been physically examined.

Because the United States had well in mind the lesson that England had learned in selecting pilots, on October 18, 1917 a "Medical Research Board" was established. This board had broad powers designated, such as "to investigate all conditions which affected the efficiency of pilots, and to act as a 'Standing Medical Board' to consider all matters pertaining to their physical and mental fitness." This board began to function immediately—in December, 1917, two members, General T. C. Lyster and Major Isaac Jones went to Europe to investigate the work carried on by the Allies. They returned with much valuable information. A research laboratory was set up at Mineola, Long Island. After several delays and handicaps were overcome, it was opened on January 19, 1918. The first experiments conducted here were those dealing with oxygen lack in high altitude flying. It was found that 16 per cent of normals begin to react to oxygen lack at 10,000 feet, and to lose efficiency. In connection with this is the interesting story told on one Lt. M. He was flying with his instructor, who noticed that at 10,000 feet the Lt's head dropped to the side of the cockpit as in a faint. The plane went into a spin and fell to the ground. The pilot was seemingly dead, having a fracture of the frontal bone and a piece of bone over the frontal sinus driven into the brain. The body was placed in the morgue. That night the morgue keeper's curiosity got the better of him. To see how deep the wound was he poked a finger into it, whereupon Lt. M. sat up and swore at the keeper. The pilot recovered, and it was later found that he did faint at an altitude of between 10,000 and 15,000 feet.

On March 8, 1918, Captain Schneider and Captain Whitney made an interesting experiment upon themselves. They used the low pressure tank, and went to the altitude of 34,000 feet, using oxygen. They found that there were no unpleasant sensations except for the painful swelling of the abdomen due to the gases in the intestine. This is still a problem in flying today. It is solved by breathing pure oxygen before going up, by eating low-gas producing foods, and by taking small tablets of charcoal.

The work of the board at the laboratory in Mineola was rapidly increased in amount and importance. By June 1918, less than a year after it was organized, the laboratory space had increased three-fold over the original plan, and a school had been established for the training of flight surgeons. Also aviation medicine had been divided into three phases—the selection of the flier, the careful testing and classification of the flier, and the care of the flier.

The practical application of aviation medicine proved to be of so much value in

the United States, that in early August 1918, in response to a cable from General Pershing, a group of 34 officers and 15 enlisted men (trained in laboratory methods) embarked for service in the A. E. F. This group set up the Medical Research Board in France, and on investigation found conditions at the front and the training centers almost deplorable. Morale was at a low ebb, physical condition was not thought of, and fatalities were common due to pilot error, the pilots had a fatalistic attitude of mind, they were stale, it was impossible for them to get over two days' leave. This Board corrected all of these conditions possible, and the improvement in number of flying hours was increased by 50 per cent with the fatality rate cut almost to nothing.

It is interesting to note that on September 17, 1918, Major Hampton was appointed the first official Flight Surgeon in the A. E. F.

After the war, the pace of experimentation and study lessened somewhat for a few years, but never stopped. The Army school and laboratory were moved to Texas and work continued. There tests to determine physical efficiency, reaction time, psychologic stability, and new methods of training flight surgeons were all given attention with numerous other problems. The Schneider Index was developed and perfected by Captain E. C. Schneider. It indicates the cardiovascular efficiency, and is made up of six factors: (1) Pulse rate reclining; (2) pulse rate standing; (3) difference between these; (4) effect of standard exercise on these rates; (5) time of return to standing rate, following exercise, and (6) difference between reclining and standing systolic blood pressure. This test is still used by the Army, and, although it is not perfect in every case, it is a fair judge for most cases.

The personality study was developed as a method of determining the psychologic stability of the pilot candidates. Its value is proved by the following statistics from the Naval Air Station at Pensacola. Before entrance, 1305 continuous cases were examined by the flight surgeon and divided into two categories: (1) good aviation material and (2) poor aviation material. This entire group was allowed to enter, that is, both categories. Of these 1305 cases, 49 per cent qualified and 51 per cent failed. When the results were examined, it was found that of the 1305 cases only 479 were originally selected as good aviation material. Of this group 77.6 per cent completed the course successfully, and only 22.4 per cent failed. Of the remaining 826 individuals placed in the "poor" class, only 32.5 per cent completed the course, 67.5 per cent being rejected before finishing the course. This shows that the present tests (up to 1935) are not 100 per cent accurate, but that they do give an improvement of 50 per cent in the tests previously used as to the number of pilots finishing the course. Another interesting study showed that the pilots in the "good" class had an accident rate of 0.2 per cent, while those in the "poor" class had an accident rate of 0.65 per cent, or over three times as high.

There have been numerous other problems and advancements made in aviation medicine—just to mention a few, "blackouts", carbon monoxide excess in cabins and cockpits, aeroneurosis, aeroembolism, ear "cracking", pressure cabins, and pressure suits. One interesting finding is that an individual's body fluids "boil" at 63,000 feet due to the tremendously reduced pressure.

All of these problems have been studied and most all of them drawn to a successful conclusion by the flight surgeons. As planes develop it will be the duty of these men to design them so that they will be safe for the man behind the wheel, or to make some apparatus for that man so that his body can safely meet the new and abnormal stresses and strains for which it is called upon. This field certainly has a bright future. I am certain that when this present conflict is over and we can get the

true story of the part played by the flight surgeons, we will be amazed at their new accomplishments.

BIBLIOGRAPHY

Grow, M. C., and Armstrong, H. G.: Fit to Fly, D. Appleton-Century Co., New York, 1941.

Iverson, L.: Recent progress in aviation medicine, J. Florida M. A., 21:279, 1934-35.

Sitt, E. R.: Trends in medical aviation, California & West. M., 30:377, 1929.

GLAUCOMA AND THE GENERAL PRACTITIONER*

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The most common cause of blindness in adults is cataract. This disease cannot go far without attracting the attention of the patient. Operation is successful in more than 90 per cent of the cases. Delay in the operation is at the expense of the patient's comfort and ability to read.

The next most common cause of loss of vision in adults is glaucoma, which may reach an advanced state without the patient's knowledge because his ability to read is affected late in the disease, the onset is insidious and progress of the disease is so gradual. It is not unusual for the patient to lose the vision of one eye entirely and the second to be seriously impaired before the patient seeks relief. Treatment of glaucoma is a serious matter at any stage of the disease and delay is fatal because of complications due to weakened blood vessels; a part, if not the cause of the disease. It is imperative then that the disease be detected early when the results of treatment are more satisfactory. The one important symptom of the disease is increase of intra-ocular pressure caused by defective drainage of the eye. The aqueous is secreted by the ciliary processes, passes through the pupil into the anterior chamber to its angle where it filters through the spaces of Fontana into the canal of Schlemm which is the portal to the venous side of the circuit. In older persons, this process is hampered by changes in the minutest capillaries, the fluid accumulates and intraocular pressure is raised. This increase in internal pressure is intermittent at first but gradually becomes constant. From incipiency to an established state may take several years. The outer coats of the eyeball are unyielding and the nerve elements upon which we depend for vision, are under abnormal internal pressure. The weakest part of the scleral coat is the cribriform lamina through which the optic nerve fibers enter the eye and this small area gradually gives way and cupping of the optic nerve head can be seen with the ophthalmoscope. When this cupping is developed, the blood vessels and nerve fibers streaming out from the nerve head into the retina are pinched as they cross the sharp unyielding edge of the cupped disc. As the temporal margin of the disc carries all of the fibers found on the nasal half plus the large papillo-mascular bundle, the fibers supplying the superior quadrant of the temporal retina are crowded together in a small sector of the disc margin above (fig. 1) and those supplying the lower quadrant are similarly crowded and located below. In order to pass through this small sector, each of these two groups is arranged in layers which exposes them to greater pressure than the other fiber groups which have larger sec-

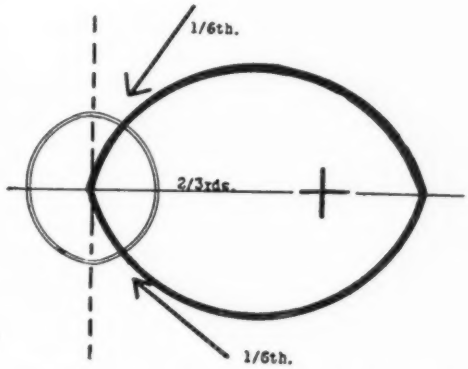

Fig. 1: The papillo-macular bundle occupies two-thirds of the temporal half of the disc margin, crowding the fibers supplying the superior and inferior retinal quadrants into narrow sectors at the top and bottom of the respective disc segment.

*Read before the New Orleans Graduate Medical Assembly, New Orleans, March 15-18, 1943

tors of the disc margin to accommodate their exit into the retina.

The increased internal pressure affects the blood and nerve supply causing progressive loss of nerve function as expressed in visual acuity. The loss is not evenly distributed as one might expect but concerns first the condensed superior temporal bundle arching from the disc around the macular area like a comet, with the head at the optic disc and the tail resting on the horizontal meridian from 20° to the periphery in the fully developed stage. This loss usually occurs (fig. 2) above the horizontal meridian first, but by the time it is well developed, the same process begins from the lower margin of the blind spot so that eventually the central macular area is a functioning island of about twenty degrees horizontally and somewhat less vertically. This small central area carries on very well for a surprisingly long time. The patient can read the paper very well but losing more and more of the peripheral field may bump into objects at the side as he walks the street, or may lose the upper part of the newspaper as he reads. This small central area loses its efficiency finally and the eye may become blind rather suddenly, which is usually attributed to some trivial event antedating the tragedy This confusion of post hoc with propter hoc is not exclusive to the laity. If one eye is affected well ahead of the other, as

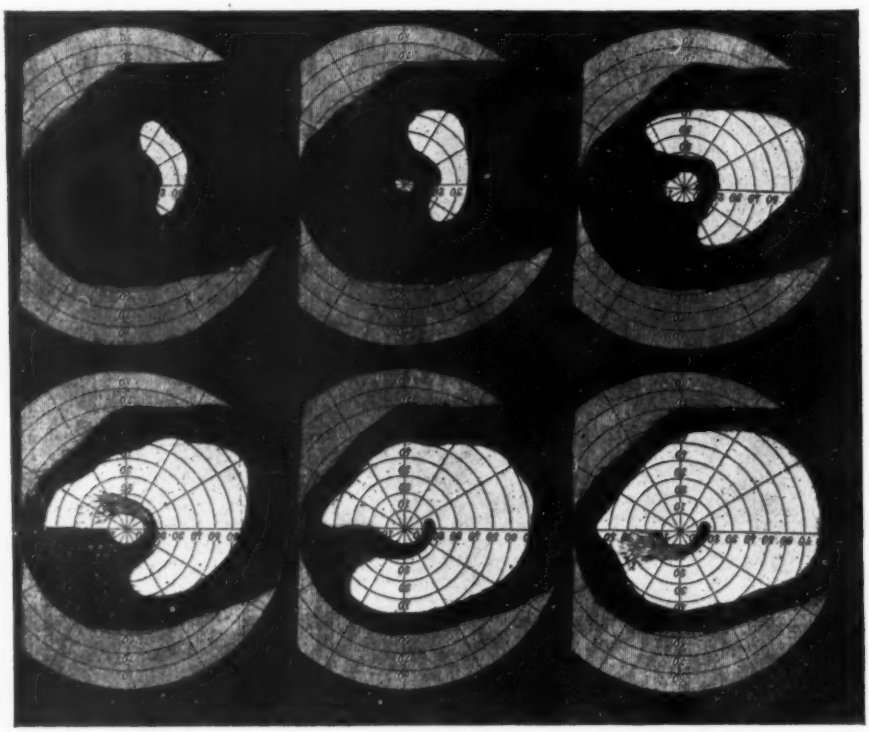

Fig. 2: Autobiography of Glaucoma. No. 1. The first loss is in the form of a comet arching above the macular oval, with the head at the blind spot and the tail spreading out nasally. No. 2. The tail now rests upon the horizontal meridian and has broken through to the periphery. No. 3. The defect above the horizontal meridian is a triangular defect nasally and is known as Roenne's nasal step. The comet defect is beginning below. No. 4. The inferior defect has joined with the superior defect and the macular area is now an island. No. 5. The critical stage just before central vision is lost. No. 6. The final stage is a helpless state because the peripheral vision remaining is of no use.

is usual, the loss may not be noticed until something gets into the better eye, compelling its closure and the patient suddenly becomes aware of his serious state. Glaucoma is always bilateral so when the patient goes to learn what is wrong with the blind eye, he is astounded to find the medical man very much interested in the apparently good eye. The symptoms of glaucoma are as follows: increased intra-ocular pressure, cupping of the optic discs, para-macular field losses and large sluggish pupils. We are interested in getting these cases when there may be only intermittent attacks of increased pressure, slight cupping of the discs and the field losses not much more than enlarged blind spots. The pupil may be small because glaucoma is a disease of adults over 45 and the normal pupil of that age is small and rigid. The tension is taken by the tonometer which measures the depth of the dimple made in the cornea by a plunger under a definite weight. Cupping is seen with the ophthalmoscope. The defects of the field of vision are found by white test objects of ¼° moving against an illuminated flat surface, rather than on the perimeter. The simplest way to reduce internal pressure is to pull the periphery of the iris away from the angle of the anterior chamber to free the drainage spaces. Pilocarpine and eserine are used for this purpose. They are indispensable in emergencies and successful in holding the tension within bounds in some cases for years. As a rule, they lose their efficiency after a time and an operation must be done. The most successful of these is the corneo-scleral trephine which permits the aqueous (fig. 3) to seep through an opening in the cornea at the angle of the chamber into a pocket under the conjunctiva, making a filtering bleb of conjunctiva at the limbus. Cure of glaucoma simplex is no more possible than the cure of old age. Our operations do not attack the cause of the disease, but facilitate the escape of fluid from the eye, reducing the tension. To hold a patient's vision for five to a dozen years may not seem much to some but to those of us who have treated this disease before the trephine operation was introduced, it is a triumph indeed.

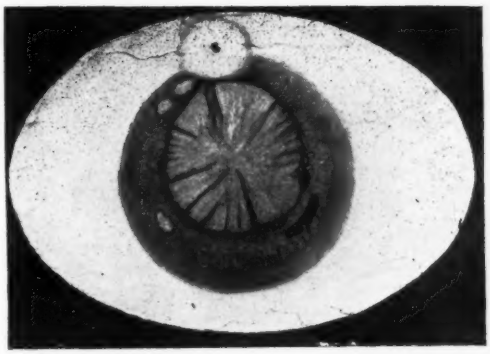

Fig. 3: Glaucoma simplex with acute attack. Above is the filtering bleb of a successful trephine. The iris is atrophic with several apertures and two pigmented clumps. Several opaque spicules in the lens show the pernicious effects of intra-ocular pressure. Note the large pupil.

The ultimate tissue changes causing glaucoma are too minute to be seen by the microscope but the later results of these changes are very evident. The periphery of the iris and the ciliary body to which it is attached, are moved forward encroaching upon the angle of the anterior chamber (fig. 4) where the filtering process mainly occurs. There are certain factors that operate perniciously upon the potential or latent glaucoma status. Dilatation of the pupil for a long period or even a modest dilatation at times, may precipitate an acute

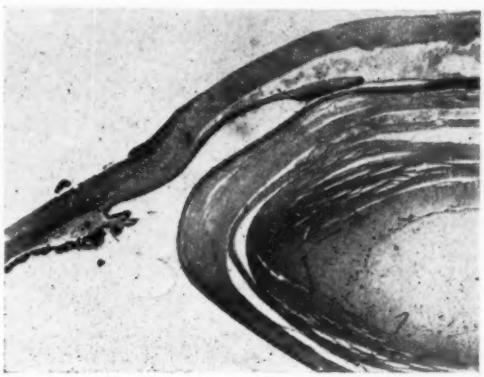

Fig. 4: Advanced glaucoma. The iris and ciliary body have moved forward, oblitering the filtering angle.

stage of the disease similar to placing a string around the base of a finger. For this reason, atropine is used cautiously in older persons. Grief and excitement have a serious effect upon latent glaucoma. It is not unusual for an apparently normal eye to become painful and lose vision suddently, after the loss of a dear one. It is asserted by many that caffeine has a peculiarly bad influence upon the eye with subnormal drainage. This is analogous to the pernicious effect of tobacco in angina and Buerger's disease. Another pernicious factor is syphilis which operates through its effects upon the nerve elements and blood vessels. Thyroid dystrophies and diabetes are other factors to be considered. It is strange but a person may have high blood pressure, say 200 mm., yet the intra-ocular pressure may be normal.

How is the general practitioner to do his share in getting these patients in the early stages when treatment produces results? Too much is expected of the general practitioner today but it is fair to ask him to be glaucoma conscious, to employ Snellen test charts as a part of his office equipment and to refer suspicious cases to the specialist. He should realize that examinations of adult eyes merely to learn what glasses may be necessary to permit the presbyopic patient to read the paper, are entirely inadequate and that a periodic examination at two and a half year intervals is necessary to keep the normal adult eye fitted with the glasses needed for reading and near work, (if the distant vision is normal). These examinations should be complete, not only to fit reading glasses but to detect the early stages of glaucoma, the earliest indications of cataract, cardio-vascular-renal disease, diabetes and the various changes incident to growing old. The examiner must be a medical man qualified by experience and training to do this particular job. The practitioner should make plain to his patients the difference between the examination of the oculist and that of the non-medical examiner. Many non-medical eye examiners use the title of doctor to suggest to patients that he is competent to detect eye pathology. This he is not trained to do, nor required by law to do. To make this clear, a decision by the Supreme Court of Alabama is cited from a case brought by a client of an optometrist who claimed she had been given glasses to relieve her symptoms. After several months' use of the glasses one eye was blind from glaucoma and detached retina. The court said the optometrist was in duty bound to advise the patient if there was any disease of the eyes that he should recognize. But this disease was not one a skillful optometrist should be expected to know. The physician's responsibility is quite different and to show this, another decision will be used. A patient was under treatment by a physician and among his complaints were some concerning the eyes. After some time the patient went to a specialist who diagnosed glaucoma and the patient brought suit, during the trial of which the judge said that if the doctor did not know what was wrong with his patient, he should have sent him to some one who did. I am not quoting this for any other reason than to show the status of the physician and the non-medical eye examiner before the law.

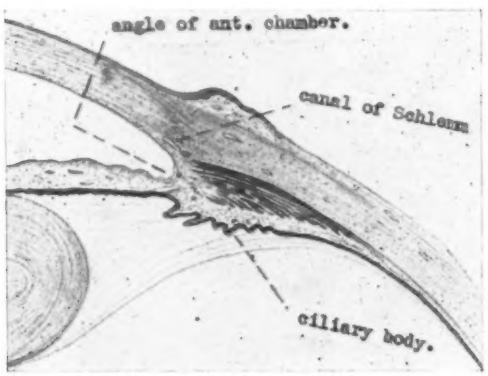

Fig. 5: Section of normal eye, showing ciliary body, angle of anterior chamber, canal of Schlemm. Aquaeous is secreted by the ciliary body forward to the anterior chamber angle where it filters through the spaces of Fontana into the canal of Schlemm, portal to the venous side of the circuit.

The war has deferred many decisions but eventually the glaucoma problem will

be part of the public health program of most states. The medical profession will be called upon for advice in these programs and must take the responsibility of guiding the efforts to obtain results.

The practical way to save otherwise healthy adults from premature relegation is to make those who come in contact with eyes glaucoma conscious. This includes nurses, public health officials, high school teachers, college personnel, optometrists and most important of all, the general practitioner. From each of these groups, according to his capacity, we must have unselfish service. The object of these efforts will not be to sell glasses nor to collect fees, but to get the self-reliant working man and housewife, rightly proud of their ability to care for those dependent upon them and meet the emergencies of daily life, to realize that the individual is not able to detect the insidious changes of declining years in himself. This is to be a long road and our successors must take over and carry on.

Some years ago, one of my doctor friends wrote a poem entitled "Bacteria and Common Sense." From it I would quote a stanza because it applies to glaucoma and other responsibilities of the medical profession. "In the garden of Eden, that very first day, there were swarms of bacterial life. On Adam, his wife, his sons and their wives and the beasts and the birds of the air. So when old Gabriel comes with his trumpet to proclaim this old world is through; there'll be germs all over old Gabriel and they'll be in his wind instrument too."

Programs of this kind do not happen, they are the results of hard work by unselfish persons who render a service that cannot be bought. The men and the women who have made our hospitals and homes successful in the many cities of our land are the ones who will accomplish all that is possible with this stubborn disease.

Buy

U.S. War Bonds

NEW ORLEANS
Medical and Surgical Journal

Established 1844

Published by the Louisiana State Medical Society under the jurisdiction of the following named Journal Committee:

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THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

ABOLISHING PRIVATE MEDICAL PRACTICE

Under the above caption a folder has been sent by the National Physicians Committee to 135,000 doctors of this country. The folder presents "A factual analysis of the Medical and Hospitalization provisions of the Wagner-Murray Senate Bill 1161 and an explanation of some of their implications." This folder should be read by every physician to whom it was sent, but appreciating that doctors are busy men these days, it is quite possible that many will put the folder to one side intending to read it later, and then forget it. It is for this reason that very briefly a few of the salient features of the brochure will be mentioned here, succinctly and without elaboration.

Senate Bill 1161 proposes to put in the hands of the Surgeon General of the United States Public Health Service the right "to hire doctors and establish rates of pay; to establish fee schedules for services; to establish qualifications for specialists; to determine the number of individuals for whom any physician may provide services; and to determine arbitrarily what hospitals or clinics may provide service for patients." Should these provisions be made effective by law it would utterly destroy our entire system of medical practice.

The Bill provides for insurance of practically every employee in the United States as well as for self-employed individuals. It would put under an insurance system sixty-two million people. The funds provided are enormous, a minimum of three billion dollars which would be applied to medical care and hospitalization for the insured. With this money the millions of people plus their dependents would be entitled to receive medical, laboratory and hospitalization benefits, the latter for a minimal period of thirty days, possibly up to ninety days.

The Surgeon General of the United States Public Health Service is empowered to make agreements and contracts with agencies, hospitals and with physicians. With the amount of money that is available and the power given to the Surgeon General it is obvious that the control of medical service in this country would be completely in the hands of one man because the Council of sixteen members which is to be appointed by the Surgeon General has no authority other than advisory.

The amount of money to be devoted yearly to this purpose is equivalent to or slightly under the average yearly revenue of the United States Government for a ten year period from 1924 to 1933. Because of the necessity of having to raise this money it is obvious that the enormously swollen

national debt which we will have after the war is over, will have little chance of being refunded. The amount of money to be devoted to the project is almost incomprehensible and unbelievable. It is estimated that every actively practicing doctor in the United States could be employed at an average salary of $5,000 a year and only about one-fifth of the sum would be needed for this purpose. The brochure also points out that with this amount of money there could be hired every available bed in every non-Government owned hospital for $5 a day and still only about one-fifth of the sum would be employed, leaving three-fifths for other purposes after these two most important features had been taken care of.

The citizenry of the United States is this day receiving better medical service than any country in the world. It can be said with all honesty that never before has any civilized community obtained the benefits of medicine and surgery as are the people of the United States receiving. Why change the present successful system? The doctors do not want it. The people may be sold the idea of getting something which they think is free, but it will not be free. Nothing is ever free that is of any value. Some one will have to pay for it. It will be the man who has to contribute to insurance funds and through taxes which means you, me and every other gainfully occupied citizen.

If you as a physician are opposed to the Wagner-Murray Bill why not let your Senator or Representative know of your objection. If these Governmental officials, who should represent the will of the people, know that we and most thinking citizens are opposed to this pernicious Bill it will probably be defeated in Congress but we must let our congressional delegation know how we feel. They should know it early and promptly.

—o—

NEPHRITIS AND SULFONAMIDES

With the increasing and unfortunately promiscuous use of the valuable sulfonamides, one must constantly be reminded of the dangers the use of these drugs involves and the precautionary methods that should be used to avoid such complications.

One phase of this subject is discussed by Murphy and Wood*. The paradox is seen of an agent which is often helpful in curing acute glomerulonephritis or pyelitis which on the other hand may produce serious renal damage. While the effect of the sulfonamides in producing mechanical blocking of various portions of the urinary tract and the hematuria, and other complications which follow has been well studied and understood, the nephrotoxic action has been not so well recognized and probably in many instances has been overlooked.

The authors present two cases of nephritis benefited by sulfonamide therapy, a third case cured with sulfathiazole and then another contrasting case with resulting renal damage, uremia and death without urinary tract blockage caused by sufathiazole.

The proper moral is emphasized. The promiscuous use of the sulfonamides for mild upper respiratory infections should be avoided. The precaution of a proper fluid intake of from 1500 to 2000 c.c. per day, careful evaluation of renal efficiency before therapy, careful observation of the urine during therapy and the maintenance of an alkaline urine should be carefully adhered to. The authors feel that while the presence of sulfonamide crystals in the urine does not mean the presence of kidney damage or that the drug should be stopped, it should cause increased care in the use of the drug and an investigation and maintenance of an optimal drug level in the blood stream. They likewise believe that the administration of one gram of soda bicarbonate with each gram of sulfonamide to produce alkaline urine resulted in fewer crystals than in those with acid urine.

It would benefit all of us to be aware of these dangers and exercise the precautions indicated.

*Murphy, F. D., and Wood, W. D.: Acute nephritis and the effects of sulfonamides on the kidneys, Ann. Int. Med., 18:999, 1943.

CIGARETTE SMOKING

In the past several months there have been several articles in lay and medical publications concerning cigarettes which have attracted considerable attention and caused widespread discussion. Because of the increased use of cigarettes in both sexes the subject is one that is constantly being brought to the attention of the physician and his patient in the management of many conditions.

One phase of the subject is presented in a recent article by Evans and Stewart.* The authors studied the effects of standard cigarettes, denicotinized cigarettes and cigarettes made from cornsilk containing no nicotine, on the peripheral blood flow. Ten normal adult males were studied. The results of these observations are interesting.

The conclusion reached by the authors was that "smoking not only regular cigarettes, but also denicotinized cigarettes or cigarettes of any type should be avoided in the presence of peripheral vascular disease."

*Evans, W. F., and Stewart, H. J.: The effect of smoking cigarettes on the peripheral blood flow, Am. Heart J., 26:78, 1943.

In the summary they enumerate the effects they noted, namely a decrease in peripheral blood flow, an increase in blood pressure and pulse rate, a decrease in the average skin temperature, a rise in rectal temperature, a small increase in basal metabolic rate about twice as often as a small decrease, and slight changes in the electrocardiogram, probably of no significance. All of these changes occurred regardless of whether regular cigarettes, denicotinized cigarettes or non-nicotine cigarettes were used and therefore could not be attributed to nicotine. "It is suggested that sympathetic stimulation brought about by the irritating effect of smoke upon the respiratory tract may be responsible for the changes."

Regardless of what may be the individual physician's personal feeling in this controversial subject, it behooves him to consider such experimental data with relation to the advice he must give the patients whom he sees with peripheral vascular disease. The application of these findings to the patient with coronary artery disease, of which there are so many, is also an important consideration.

ORGANIZATION SECTION

The future of medical practice and economics is of paramount importance to all of us and at this time particularly, it looms large in the minds and hearts of all those interested in organized medicine.

The May Medical Record has this news item: "A committee to study medicine and the changing order has been organized by the New York Academy of Medicine with objectives defined as follows: To be informed on the nature, quality and direction of the economic and social changes that are taking place now and that are clearly forecast for the immediate future; to define in particular how these changes are likely to affect medicine in its various aspects; to determine how the best elements in the science of medicine and its services to the public may be preserved and embodied in whatever changed social order may ultimately develop."

Dr. Morris Fishbein, in his address before the National Conference on Planning for War and Postwar Medical Services, held in New York recently, spoke of the continuous and rapid evolution the practice of medicine has undergone since World War I, but he nevertheless insists that the fundamental features which have made American medicine the great profession it is have been retained.

Dr. Fishbein says: "American medicine recognizes its obligation. This conference has served to place before all of us the imminent threat of new postwar medical problems. We shall study those problems;

we shall plan; we will meet the obligation inherent on us to provide our people with the quality of medical service that has given us the lowest sickness and death rates in the world.

"The medical profession has recognized the necessity for cooperation between the national, state and local governments with the forces of medicine, public health and welfare in the solution of these problems. However, medical decisions in matters of medical care must be made by medical men or there can be no safety for the patients. When medical decisions are controlled by economic considerations, the medical profession must have a voice in those economic factors.

"Man, whatever his political color, is an individual in illness even more so than in health, and his doctor must remain an individual and not become an official.

"By their own initiative the physicians of this country will have offered to the nation by 1944 the services of more than fifty thousand doctors to meet the nation's needs in time of war. By their own initiative they seek to give to the postwar world the most that American medicine can give for the restoration of the peoples of the world to health and physical fitness. They do not hesitate in offering themselves; they have been trained in the traditions of American medicine.

"They will meet that obligation as they have met every other call placed on them in the past—voluntarily, bound only by the traditions of their great profession, uncompelled by any arbitrary mechanism such as that founded by totalitarian governments to enslave both their people and the physicians who serve them."

ATTENTION ALL PHYSICIANS SENATE BILL 1161

There has been introduced in the U. S. Senate an amendment to the Social Security Act providing for the establishment of a most comprehensive and revolutionary form of federal control of the practice of medicine. Again Senator Wagner is sponsoring this legislation known as Senate Bill 1161. This is a $3,000,000,000 contribution for disarranging our great profession. It will unquestionably have the great and influential support of the president and certain members of his cabinet who were actively behind a similar measure some years ago which met with failure.

Look at the totalitarian medical powers granted to the Surgeon General of the United States Public Health Service, if this measure prevails and becomes a law.

*"Senate Bill 1161 makes provision for *free* general medical, special medical, laboratory and hospitalization benefits for more than one hundred ten million people in the United States.

"It proposes placing in the hands of one man—the Surgeon General of the Public Health Service—the power and authority—

"1. To hire doctors and establish rates of pay—possibly for all doctors;

"2. To establish fee schedules for services;

"3. To establish qualifications for specialists;

"4. To determine the number of individuals for whom any physician may provide service;

"5. To determine arbitrarily what hospitals or clinics may provide service for patients.

"The provisions are so sweeping that, if enacted into law, the entire system of American medical care would be destroyed."

A real emergency exists. Only by united and concerted effort of the medical profession and their friends can this measure be defeated. Write now to your senator for a free copy of Senate Bill 1161. Have three or four of your friends do likewise. Read it and be informed of the dangers threatening our American way of the practice of medicine.

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*Quotation from the National Physicians Committee.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

At the recent business meeting of the Louisiana State Medical Society the questions of ownership of the New Orleans Medical and Surgical Journal, the turning over of books and journals to the Library of the Orleans Parish Medical Society, and the Library Extension Service were again raised.

Prior to 1922 the New Orleans Medical and Surgical Journal was published by Drs. Charles Chassaignac and Isadore Dyer. Following the American Medical Association convention in New Orleans, April 26-30, 1920, the entertainment committee, which was a committee of the American Medical Association and not of the Parish or State Societies, had a surplus in the entertainment fund. This money did not belong to the Orleans Parish Medical Society or the Louisiana State Medical Society, as the entire amount of money collected for entertainment purposes came from the merchants of the City. The American Medical Association stated that the disposition of the surplus rested entirely with the committee.

The committee thought it would be a good investment to purchase the New Orleans Medical and Surgical Journal for the Orleans Parish Medical Society; they felt that the Library of the Orleans Parish Medical Society would receive in books and journals more than the original investment. The Orleans Parish Medical Society refused the Journal, therefore it was offered to the Louisiana State Medical Society and accepted by them after quite some deliberation. The Journal was purchased for a consideration of $5,000, of which $3,000 cash was paid from the surplus in the entertainment fund, and the Louisiana State Medical Society was to pay the balance of $2,000. However, the profit from the Journal was more than sufficient to cover the balance due.

When the committee turned the Journal over to the Louisiana State Medical Society they made certain stipulations which the Louisiana State Medical Society agreed to abide by. These stipulations are: (1) The domicile of the Journal to remain in the City of New Orleans, and (2) all books received for review and all journals received in exchange, or otherwise received by the Journal are to be turned over to the Library of the Orleans Parish Medical Society.

The New Orleans Medical and Surgical Journal is owned by the Louisiana State Medical Society and is the official organ of all parish and district societies of the State Society.

One must not get the impression that all books and journals in the Library of the Orleans Parish Medical Society have been received from the Journal. The Orleans Parish Medical Society spends several thousand dollars each year in purchasing journals and books, and also in the binding of books and journals. The books and journals received from the New Orleans Medical and Surgical Journal, on an average, amount to approximately 25 per cent.

In February 1938 the Librarian of the Orleans Parish Medical Society suggested to the Board of Directors of the Orleans Parish Medical Society that the use of its Library be extended to physicians throughout the state, and that the expense involved in the establishing of this service could be defrayed by charging a small fee to those subscribing. It was felt that this service should be given free to the members of the Louisiana State Medical Society and was, therefore, brought up at a meeting of the House of Delegates of the State Society, suggesting that a portion of each member's dues be allocated to the library extension service fund to defray the expense involved, but was rejected by them. The plan of establishing an extension service to the out-of-town physicians and charging a small fee to defray expenses was then presented to the general membership of the Orleans Parish Medical Society and approved. An announcement of this service was sent to every out-of-town member of the Louisiana State Medical Society, as well as physicians in the larger towns and cities of Mississippi and Alabama.

We trust that one day the Louisiana State Medican Society will see the benefits a physician derives from this service and, therefore, make every member of the State Society eligible by allocating a portion of his dues to the library extension service fund of the Orleans Parish Medical Society.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

SOUTHERN MEDICAL ASSOCIATION

A recent meeting of the Executive Committee of the Southern Medical Association was held in New Orleans under the chairmanship of Dr. Lucien A. LeDoux. The Executive Committee unanimously agreed that the regular annual meeting should be held next November 16-18. This meeting will be held in Cincinnati under the general chairmanship of Dr. James A. Ryan of Kentucky.

At the time of the meeting of the Southern there will be held concurrently meetings of a half dozen different national medical associations which have southern branches.

The opening day of the meeting will be devoted to general clinical sessions. On Wednesday and Thursday will be held two general meetings in which papers will be presented from the association sections, one representing surgical specialties and the other medical specialties. This year there will be no formal section meetings but each of the twenty-one sections will contribute its apportioned number of papers to the general sessions. Needless to say war medicine and surgery will be actively stressed.

SPECIAL NOTICE

Cooperation of all Louisiana physicians is requested in complying with the following request received by the office of the Secretary of the State Society.

June 21, 1943.

Directive of the President

Dear Sir:

There is set out below for your information the text of a Presidential Directive dated January 8, 1943. I thought you would be interested in receiving this information so that you will be apprised of the President's wishes relative to the handling of subversive information and investigations based thereon.

"January 8, 1943.

"Police Cooperation

"On September 6, 1939, I issued a directive providing that the Federal Bureau of Investigation of the Department of Justice should take charge of investigative work in matters relating to espionage, sabotage and violations of the neutrality regulations, pointing out that the investigations must be conducted in a comprehensive manner, on a national basis and all information carefully sifted out and correlated in order to avoid confusion and irresponsibility. I then requested all police officers, sheriffs, and other law enforcement officers in the United States, promptly to turn over to the nearest representative of the Federal Bureau of Investigation any such information.

"I am again calling the attention of all enforcement officers to the request that they report all such information promptly to the nearest field representative of the Federal Bureau of Investigation, which is charged with the responsibility of correlating this material and referring matters which are under the jurisdiction of any other Federal agency with responsibilities in this field to the appropriate agency.

"I suggest that all *patriotic organizations and individuals* likewise report all such information relating to espionage and related matters to the Federal Bureau of Investigation in the same manner.

"I am confident that all law enforcement officers, who are now rendering such an invaluable assistance toward the success of the internal safety of our country will cooperate in this matter.

(S) Franklin D. Roosevelt."

It is requested that you bring the contents of this directive to the attention of the members of your organization for their information and guidance in reporting such matters to the Federal Bureau of Investigation, 1308 Masonic Temple Building, New Orleans, Louisiana, telephone CAnal 4671. It is to be noted that all individuals and organizations were included in the above directive by the President.

Very truly yours,

(S) R. A. GUERIN,
Special Agent in Charge.

SHORTAGE OF SMALL ANIMALS

There is a tremendous need for certain small animals necessary for laboratory and therapeutic purposes as there is an acute shortage of cats for assaying of digitalis, guinea pigs for tuberculosis studies and rabbits for the preparation of serum. It is understood that the War Production Board will be sympathetic in giving priority for material necessary to raise small animals. In view of this shortage physicians might encourage the raising of these animals by their younger patient groups.

TOTAQUINE

In view of the shortage of quinine it might well be advisable to record the fact that totaquine has been found to be practically as valuable as quinine by the Liverpool School of Medicine. From Panama comes the announcement that at the Gorgas Hospital, when given in huge doses, the results have been excellent.

FAUST HONORED

The College of Physicians of Philadelphia awarded the Alvarenga Prize on July 14, 1943 to Ernest Carroll Faust, Professor of Medical Parasitology, and Acting Head of Department of Tropical Medicine, Tulane University, for his outstanding contributions to our knowledge of parasitology and tropical medicine.

This Prize was established by the Will of Pedro Francisco Da Costa Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, to be awarded annually by the College of Physicians on each anniversary of the death of

the testator, July 14, 1883, to the author of the best memorial upon any branch of medicine, which may be deemed worthy of the prize.

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

More than $59,000 of medical and surgical supplies were donated during the past 6 months by the Medical and Surgical Relief Committee to the U. S. Navy, the U. S. Coast Guard, the armed forces of our Allies and to welfare groups here and abroad. This brings the total value of shipments up to $551,699.24 since the Committee was launched 3 years ago, Mrs. Huttleson Rogers, executive chairman, announced today at a meeting to mark the third anniversary of the founding of the organization.

The detailed semi-annual review reported that over 500 portable emergency medical kits were furnished by the Committee to Navy sub-chasers, destroyer-escorts and Coast Guard patrol-boats. Specially designed for the small sub-hunting craft, the patrol-boat and sub-chaser kit is equipped with drugs and instruments to give immediate treatment to casualties or accidents. The medical kits are consigned through the 13 U. S. Naval Districts or are sent directly to the ships' commanding officers.

THE AMERICAN CONGRESS OF PHYSICAL THERAPY

Will hold its twenty-second annual scientific and clinical session September 8-11, 1943, inclusive, at the Palmer House, Chicago. Rehabilitation is in the spotlight today—Physical Therapy plays an important part in this work. The annual instruction course will be held from 8:00 to 10:30 a. m., and from 1:00 to 2:00 p. m. during the days of September 8, 9 and 10, and will include a round table discussion group from 9:00 to 10:30 a. m., Thursday, September 9. The scientific and clinical sessions will be given on the remaining portions of these days and evenings. A feature will be an hour demonstration showing technic from 5:00 to 6:00 p. m. during the days of September 8, 9 and 10. All of these sessions will be open to the members of the regular medical profession and their qualified aids. For information concerning the instruction course and program of the convention proper, address the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

INFECTIOUS DISEASES IN LOUISIANA

For the week ending June 12 the weekly morbidity report of the Louisiana State Board of Health showed the most prevalent disease to be pulmonary tuberculosis with 34 cases. There were 17 cases of measles, 13 cases of mumps, and five cases of typhoid fever. There were no cases of pneumonia reported for this week. The following week, ending June 19, the number of cases of pulmonary tuberculosis increased to 46, again heading the list. There were two cases of poliomyelitis reported, one from Calcasieu Parish and one from Orleans Parish, and the typhoid fever cases again totaled five. Other diseases reported in numbers greater than ten included 19 cases of measles, 18 of mumps and 14 of whooping cough. There were three cases of rabies in animals reported. For the week ending June 26, pulmonary tuberculosis had increased to 68 cases and there were 12 cases of cancer, 10 cases of malaria, 13 cases of measles and 13 cases of whooping cough. Again two cases of poliomyelitis were reported, one from Orleans Parish and one from Rapides Parish. There were nine cases of typhoid fever scattered through Beauregard, Franklin, Natchitoches, Orleans and Richland Parishes. There were two cases of endemic typhus reported, one from Acadia Parish and one from Iberia Parish. In the report for the week ending July 3, which contained the monthly report of venereal diseases, there were 1953 cases of syphilis, 1282 of gonorrhea and 93 cases of chancroid reported. The number of cases of pulmonary tuberculosis had decreased to 31, the total for the four previous weeks amounting to 295. Two cases of undulant fever were reported and there were seven cases of meningococcus meningitis reported. Other diseases in the larger amounts were 38 cases of bacillary dysentery, 14 cases of granuloma inguinale, 22 cases of lymphopathia venereum, 29 cases of measles, 20 cases of mumps and 10 cases of whooping cough.

NEW RECOMMENDATIONS ON BURNS AND WOUND INFECTIONS IN AIR RAID CASUALTIES

The Medical Division of the Office of Civilian Defense has revised its pamphlet "Treatment of Burns and Prevention of Wound Infections" to incorporate new technics that have been developed within the past year. The recommendations in this pamphlet are based on recent directions of the Committee on Chemotherapeutic and Other Agents and the Subcommittee on Burns of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Originally drawn up by these committees for the armed forces, the recommendations have been modified to adapt them to the problems involved in the treatment of civilian casualties.

Recommendations for the use of sulfonamides are accompanied by the observation that these drugs must be used more cautiously in the treatment of civilian wounds than is necessary in the care of military casualties, for the following reasons:

"The injured may include individuals of all ages and with various types of pre-existing disease, instead of a selected group of healthy young males. The possibility of toxic effects is therefore greatly enhanced. Moreover, it is assumed that in civilian injuries, hospitalization will be possible in a relatively short time, whereas in mili-

tary operations such is not always the case. This usually makes it possible to postpone all consideration of chemotherapy until the injured have been hospitalized. It is then possible to administer sulfonamides with better safeguards and to consider such contraindications as other pathological conditions or known sensitivity to individual drugs. The dangers of dehydration can also be better prevented or overcome under such circumstances."

THE EMERGENCY CARE OF BURNS

Whenever casualties with extensive burns can be admitted to hospitals without delay, and definitive treatment can be instituted promptly, morphine sulphate, one-half grain, should be administered at the scene of the incident and no local therapy applied to the burned area except sterile gauze to exposed surfaces to prevent infection.

The discussion of definitive treatment of burns has been expanded to stress the necessity for administration of large amounts of plasma.

"In patients with severe burns, quantities up to 12 units or more may be required in the first twenty-four hours," it is pointed out. "To the patient in critical condition, plasma must be given rapidly (as much as 500 cc. in 10 minutes may be necessary) and not allowed to flow drop by drop. It must never be administered by any other than the intravenous route. Syringe injection may be used. If facilities for hematocrit determinations are available, the following general rule can be used for guidance regarding the amount of plasma required. For each point that the hematocrit is above 50 percent cells, at least 100 cc. of plasma should be administered. If clinically satisfactory results are not obtained with this dosage, larger quantities should be given." A footnote points out that rapid administration of intravenous fluids may be dangerous to cardiac patients and that the physician's judgment will have to determine the amount as well as the rate of administration in such cases.

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WAR FOOD ADMINISTRATION

Of interest to all physicians is Amendment 34 to Ration Order 16 and Amendment 25 to General Ration Order 5 issued by the Office of Price Administration under date of June 1, which places evaporated and condensed milk on the list of rationed products.

These types of milk are added to the group of rationed foods containing meats and fats, for which red ration stamps are needed, without any increase in the total number of points allowed for this group. One point is required for one 14½-ounce can or for two 6-ounce cans or for two 8-ounce cans.

Translated into feeding schedules, this means that the infant or child may use 7 of his 16 points per week for his milk requirements in terms of evaporated milk which allows slightly less than the equivalent of a quart of whole milk per day, and have 9 points remaining for his meat and fat requirements. This provides ample allowance of meat and fats for the infants and also for the young child who may still be using evaporated instead of fluid milk.

An invalid or any other person whose health requires that he have more canned milk than he can obtain with the stamps in his War Ration Book II, may apply at his local War Price and Rationing Board for additional points under Section 2.4 of Ration Order 16. With the application the consumer must submit a written statement of a licensed or registered physician or surgeon showing why the consumer must have more canned milk, the amount needed during the succeeding two months and why unrationed foods cannot be used instead.

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RUSSIAN WAR RELIEF

Russian War Relief, which is sending American medical textbooks to Russian schools training surgeons and doctors for the front lines, has issued a new appeal for contributions of medical literature.

The appeal was in response to requests from the Russian Society for Cultural Relations with Foreign Countries. Russian officials point out that many Soviet schools of medicine were evacuated thousands of miles to Central Asia and the Urals from Kharkov, Kiev and other occupied cities. In most cases libraries had to be left behind. The Kiev Medical Institute, cited as one example, was moved to Chelyabinsk in the Urals, 1300 miles away. The Kharkov Medical Institute, whose faculty and student body were evacuated as the Reichswehr battered at the city's gates, is now at Chkalov, on the Ural River.

Many of the books sent from America to these and other medical schools were contributed by doctors and medical associations from all parts of the United States. They range in subject from child development to neuroses in war.

Inquiries or gifts of medical books should be sent to Russian War Relief, Inc., 11 East 35 Street, New York, 16, N. Y. A complete list of the books needed in the Soviet Union will be sent upon request. Donors may attach to their contributed books notes which will be forwarded to Russian medical libraries receiving the books.

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AMERICAN RED CROSS

July 8, 1943.

The Editor,
New Orleans Medical & Surgical Journal,
1430 Tulane Avenue,
New Orleans, Louisiana.

Dear Sir:

Just recently Miss Marguerite Wales, our Director of Nursing Service for the Eastern Area of the American Red Cross requested that I ask the assistance of the presidents and editors of the

State Medical Association Journals in bringing to the attention of the medical profession the urgent need for more nurses for the Armed Forces. As you know, the Surgeon General of the Army has given the Red Cross entire responsibility for the recruitment of nurses. We also recruit for the Navy Nurse Corps. Our military services need nurses at the rate of 36,000 annually.

Miss Wales informs me that of the nurses assigned to the Armed Forces at this time only 21% came from the private duty group, while 68% are from the institutional group, 6% from Public Health, 4% from a miscellaneous group, and 1% from the industrial group. There is need for active recruitment of nurses from the private duty group.

We believe that the physician, better than anyone else, is in a position to encourage private duty nurses to enroll for military duty, and teach the layman to further contribute to winning the war by dismissing a private nurse as soon as the stage of convalescence has been reached. The medical profession, even though at a great sacrifice, can discourage the layman from using the private duty nurses longer than it is necessary for the patient to have sufficiently arrived at that stage in his illness from which point onward he can be adequately cared for by a general floor duty nurse in the hospital or by his family at home.

Such education of the patient and immediate family by the physician would, we believe, bring about an equitable distribution of nursing care and release a considerable number of private duty nurses for enrollment for services with our Armed Forces.

With kindest regards, I am,

Very sincerely yours,

John F. Busch, M. D.,
Director Medical & Health
Service, Eastern Area.

JFB/amh

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THE WOUNDED MUST NOT DIE

Marguerite Wales
Director of Nursing Service, Eastern Area

The wounded must not die! This is the call to the colors which has gone out to registered nurses from the American Red Cross. Thirty-six thousand nurses are needed annually for war duty—30,000 for the Army and 6,000 for the Navy. The number required each month is 3,000 nurses, yet at no time this year has the quota been met.

Appointed by the Surgeon-General of the U. S. Army as the official nurse recruiting agency, the Red Cross is now asking the support of physicians in presenting the appeal to the members of the nursing profession whose presence in the amphitheatre of conflict is essential to the winning of the war. Enrollment is not obligatory. Nurses must be convinced of the need and encouraged to enter service. Doctors by giving their advice and counsel can help nurses to make their decisions.

The size of the Army in World War II is twice that of the last war, and there are six times as many military posts inside the United States and five times as many outside our territorial limits. Yet the increase of nurses is not nearly proportionate. In the last war 23,868 were serving; so far in this war approximately 30,000.

To determine the availability of nurses and the distribution of their services, a recent survey was conducted by the United States Public Health Service. From an estimated 500,000 graduate nurses in the United States, 300,000 replies were received to the questionnaires.

Tabulating the distribution of nurses in 30 representative states, it was found that nurses assigned to the armed forces came from the following groups: institutional, 68 per cent; private duty, 21 per cent; public health, 6 per cent; miscellaneous, 4 per cent; and industrial, 1 per cent.

Using a previous inventory for the same states taken in 1941, a comparison was made between the distribution of nurses in major civilian fields for that year and for 1943. The table follows:

	1941	1943
Institutional	47%	44%
Public Health	10%	11%
Private Duty	60%	62%
Industrial	3%	7%

The above figures are a significant index of what has happened in the various fields of nursing as affected by the military situation. The loss has been in institutions, while public health, and in a larger measure, industry have gained. Private duty assignments, on the other hand, have remained practically the same. It is from this field primarily that nurses must be released for military duty.

The request for private duty nurses comes to physicians first, and it is they who can help greatly by bringing to the attention of their patients the shortage of nurses in the armed forces. The Red Cross appeals to physicians directly to interpret this need to the public, especially to the nurses themselves and to their patients.

Nursing "as usual" cannot go on and civilian hospitals will be forced to operate under the strain of reduced staffs. Yet inventories reveal that there is a back-log of nurses who have yet to be called upon to fill in the gaps. In 1941 there were 13,753 active and available nurses; in 1943 the number has been increased to 23,009. In reverse ratio, the number of inactive nurses listed as not available has been reduced from 42,647 in 1941 to 29,124 in 1943.

Outside the patriotic motive, the inducements to enter the service are more attractive than ever before. Nurses go into the Army with the relative rank of second lieutenant and go into the Navy with the rank of ensign. They receive a monthly base pay of $150 with "allowances" increasing the value to an estimated $216. Promotion to the

higher ranks carries the same pay increases as in other branches of the services, and privileges and responsibilities are the same as for any military officer of comparable rank. Government insurance and retirement privileges are included.

Through nurse recruitment stations set up in every city of 25,000 population or more, the widespread facilities of the Red Cross have been used to carry the appeal to nurses and the public again and again. Now the Red Cross turns to the medical profession for its active cooperation in this all-important campaign.

We cannot be secure on the home front unless our troops have the best nursing care; we cannot be certain of victory unless the wounded have every chance to live.

MEDICAL OFFICERS NEEDED FOR FEDERAL CIVILIAN WAR SERVICE

The critical shortage of physicians to engage in vital war work in the civilian branches of the Government continues. The great need for these men resulted in the announcing of a liberalized civil-service examination for Medical Officers in 1941. The Civil Service Commission has just revised and re-announced this examination.

The twenty optional branches under which doctors may apply range from General Practice to Aviation Medicine. Those appointed will perform professional duties as doctors of medicine in active practice in hospitals, in dispensaries, or in the field or in rural areas; or in bureaus of the Government such as the Veterans Administration, Civil Aeronautics Administration, Public Health Service, and Food and Drug Administration. Doctors will also be used in industrial establishments under direction of the War Department.

Applicants for all grades must have received the degree of M. D. from an accredited medical school. Applicants for the Senior Medical Officer grade ($5,228 a year) must have had at least 5 years of appropriate medical experience; for the Medical Officer grade ($4,428 a year), 3 years of experience in addition to a required interneship; and for the Associate Medical Officer grade ($2,828) 1 year of interneship. The salaries quoted include overtime pay.

Further information and application forms may be obtained at first- and second-class post offices, Civil Service Regional Offices, and the Commission in Washington, D. C.

NEWS ITEMS

Surgeon Charles E. Allen of the United States Public Health Service has been relieved of duty in Atlanta and directed to proceed to District #4 of the U. S. P. H. S. in New Orleans.

Assistant Sanitarian Melvin E. Griffith has been relieved of duty in New Orleans and directed to proceed to Oklahoma City.

Past Assistant Dental Surgeon William N. Neaf has been relieved of duty in Stapleton, Staten Island, New York and has been directed to serve as District Coast Guard Officer of the 8th Naval District in New Orleans.

TRANSPORTATION PLANS FOR CIVILIAN DEFENSE

Transportation for casualties from scenes of disaster to hospitals and for injured persons or other patients removed from Casualty Receiving Hospitals to Emergency Base Hospitals are included in plans for emergency transport service during war disasters, described in recent Operations Letters issued by the Office of Civilian Defense.

Plans for local transportation are centered in the Transport Officer of the U. S. Citizens Defense Corps. It is the duty of the Transport Officer to maintain inventories of local equipment that can be used by the various emergency services of the Citizens Defense Corps, and he is responsible for organization, training, and supervision of volunteer drivers' units. Such equipment may include passenger cars, station wagons, motorcycles, ambulances, and other private vehicles. The instructions provide, however, that ambulances and cars or trucks used as improvised ambulances, with their drivers, should be assigned regularly to the Emergency Medical Service and be under its direction.

Through joint action of the Office of Defense Transportation and the Office of Civilian Defense, concurred in by the War and Navy Departments, local commercial motor vehicles, including taxicabs and trucks of small operators, which are now under the jurisdiction of the Office of Defense Transportation, have been released to and also are available to the Transport Officer for local service in case of war emergency. He may make use of such vehicles immediately, without application to the ODT.

For transport facilities needed outside the local area, such as might be required for evacuation of civilians or for transfer of injured persons to Emergency Base Hospitals in other cities or rural areas, the OCD and the ODT are cooperating in the organization of motor transport units in the larger common, contract, and private motor carriers of the critical areas of the country. These units, which will be trained in convoy service, will be provided by the ODT on request of the local Commander of the Citizens Defense Corps through the State Transport Officer and proper ODT district managers. ODT is at present developing an organization in the critical areas of the country under which its district managers will make contact with the local Transport Officers to make certain that each community is organized to function under the plan.

Operations Letter No. 114, issued March 3, which describes the above arrangements, urges cooperative planning between the Citizens Defense Corps and such agencies as the American Red

Cross, the Women's Defense and Ambulance Corps, and local or state automobile associations or clubs, in order that several agencies may not seek to mobilize the same equipment and drivers independently, but may do so in cooperation. It is pointed out, for instance, that most local Red Cross chapters have permanent transportation committees to provide motor transport facilities for disaster relief. By cooperative planning, such facilities can be made available also to the Citizens Defense Corps.

WOMAN'S AUXILIARY

The following are the officers of the Women's Auxiliary to the Louisiana State Medical Society for 1943-1944:

Officers

President—Mrs. George J. Taquino, 18 Fontainebleau Drive, New Orleans.

President-elect—Mrs. Rhodes Spedale, Plaquemine.

First Vice-President—Mrs. W. R. Harwell, 715 Elmwood, Shreveport.

Second Vice-President—Mrs. A. D. Tisdale, Riverside Sanitarium, Monroe.

Third Vice-President—Mrs. D. B. Barber, Pineville.

Fourth Vice-President—Mrs. Thos. Richardson, Minden.

Treasurer—Mrs. Paul Lacroix, 3122 State Street Drive, New Orleans.

Recording Secretary—Mrs. E. Ellender, Houma.

Corresponding Secretary—Mrs. Waldemar Metz, 2437 Jefferson Avenue, New Orleans.

Chairmen of Standing Committees

Archives—Mrs. Jerome E. Landry, 2336 Milan Street, New Orleans.

Bulletin—Mrs. Cassius L. Peacock, 8415 S. Claiborne Avenue, New Orleans.

Cancer Control—Mrs. Edmond Souchon, 3136 Octavia Street, New Orleans.

Doctor's Day—Mrs. C. R. Gowen, 5900 Line Avenue, Shreveport.

Entertainment for Men in Service—Mrs. Arthur D. Long, Jr., 1367 Steele Blvd., Baton Rouge.

Exhibits—Mrs. Donovan C. Browne, 4920 St. Charles Avenue, New Orleans.

Finance—Mrs. Carl Young, 1811 Jahncke Avenue, Covington.

Historian—Mrs. Edward C. Melton, Plaquemine.

Hygeia—Mrs. Robert W. O'Donnell, 117 Stone Avenue, Monroe.

Indigent Widows—Mrs. Aynaud Hebert, 2013 Napoleon Avenue, New Orleans.

Legislation—Mrs. Roy B. Harrison, 2327 Napoleon Avenue, New Orleans.

Organization—Mrs. B. C. Garrett, 4700 Fairfield, Shreveport.

Parliamentarian—Mrs. M. H. Foster, 1316 Albert, Alexandria.

Press and Publicity—Mrs. M. C. Wiginton, Hammond.

Printing—Mrs. Willard Wirth, 402 Vincent Avenue, New Orleans.

Program—Mrs. DeWitt Milam, 1704 Island Drive, Monroe.

Public Relations—Mrs. John S. Dunn, 8410 Pontchartrain Blvd., New Orleans.

Red Cross—Mrs. Clarence B. Erickson, 423 Herndon Avenue, Shreveport.

Revision of By-Laws—Mrs. C. Grenes Cole, 4938 St. Charles Avenue, New Orleans.

Councilors

First District—Mrs. Daniel J. Murphy, 127 S. Solomon Street, New Orleans.

Second District—Mrs. Daniel N. Silverman, 47 Versailles Blvd., New Orleans.

Third District—Mrs. C. C. deGravelles, New Iberia.

Fourth District—Mrs. R. T. Lucas, 535 Perremont Road, Shreveport.

Fifth District—Mrs. A. G. McHenry, 1910 Riverside Drive, Monroe.

Sixth District—Mrs. A. W. Martin, 902 Virginia Avenue, Bogalusa.

Seventh District—Mrs. J. D. Frazar, DeRidder.

Eighth District—Mrs. H. O. Barker, Horse Shoe Drive, Alexandria.

OUACHITA PARISH

Luncheon in the Butterfly room of the Frances Hotel proved a charming interlude for members of the Women's auxiliary to the Ouachita Parish Medical society who were welcomed by Mrs. Irving Wolff, Mrs. John Pracher, Mrs. A. G. McHenry.

Blue delphinium and yellow daisies overflowing from a crystal basket centering the luncheon table created a lovely splash of color.

Mrs. R. W. O'Donnell, president, presided during the short business meeting. She gave a splendid report of the executive board meeting she attended recently in Baton Rouge.

Mrs. Wolff, chairman of the Nurses' Committee, stated that owing to the exigencies of the times, the usual party for the graduating class of St. Francis Sanitarium was not held. However, each 1943 graduate received a gift from the auxiliary wrapped in tissue and tied with purple and gold ribbon, the class colors.

Present were: Mrs. F. C. Bennett, Mrs. Irving Wolff, Mrs. G. T. Gallaspy, Mrs. G. W. Floss, Mrs. John Pracher, Mrs. A. L. Peters, Mrs. David L. Coats, Mrs. Raymond Seshul, Mrs. A. G. McHenry, Mrs. Roland L. Mindlin, Mrs. J. L. Cadranel, Mrs. W. C. Simpson, Mrs. P. L. Perot, Mrs. D. M. Moore, Mrs. R. W. O'Donnell.

This is the beginning of the journalistic efforts of this writer. I shall endeavor to bring you items of interest from your Auxiliary and all I ask is that I have your full cooperation in furnishing all the news possible.

Mrs. Marquio C. Wiginton,
Chairman of Press and Publicity.

BOOK REVIEWS

Manual of Industrial Hygiene and Medical Service in War Industries: Issued under the auspices of the Committee on Industrial Medicine of the Division of Medical Sciences of the National Research Council; Prepared by the Division of Industrial Hygiene, National Institute of Health, United States Public Health Service; Edited by William M. Gafafer, D.Sc. Philadelphia, W. B. Saunders Company, 1943. Pp. 508, illus. Price, $3.00.

Three major divisions of the text are made: (1) organization and operation of industrial hygiene, (2) prevention and control of disease in industry, and (3) the manpower problem. The first division contains a well organized chapter, Available Services in Industrial Hygiene, new to texts on industrial hygiene. This chapter is particularly of value in that it describes the activities of the various official and unofficial agencies operating in the field and concludes with a discussion of the integration of the services of these various agencies. The third division, The Manpower Problem, almost entirely original in its theme, emphasizes the awareness of the group to the problems of the present-day industrial situation. This division is devoted to the problems of (1) maximum use of manpower, (2) women in industry, and (3) absenteeism.

While this composite book with 16 contributors, 508 pages, and 20 illustrations is primarily intended to be a source of information for industrial physicians, engineers and hygienists, its success in scope and clarity makes it a highly desirable text for the physician only occasionally confronted in his private practice with industrial problems as they relate themselves to an individual patient. It is also to be considered as a text or constant reference source for the medical student in his work in industrial hygiene or industrial medicine.

RALPH H. HEEREN, M. D.

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Medical Progress Annual: Edited by Robert N. Nye, M. D. Springfield, Ill. Chas. C. Thomas Co., Vol. III, 1942. Pp. 678. Price, $5.00.

This volume is made up of reports appearing in the New England Journal of Medicine during 1941. There are fifty-two chapters, which means that there are fifty-two timely topics devoted to medicine and surgery. Quite quickly one is impressed with the fine quality of the work at hand and it requires little effort to realize that these are no ordinary routine reviews but real concise and comprehensive monographs each dealt with by authors and physicians authoritative in their specialties. At the end of each chapter are pertinent references and at the end of the book is a good brief index.

Throughout the book one is impressed by the effort to be scientific yet simple, complete yet not superfluous. There is no effort made to review the entire literature or to refer the reader to many unimportant and insignificant articles. The authors attempt to present the real advances that bid fair to be of permanent value in the continual progress of medical science. There is no point in nor does time permit of an enumeration of the particular subjects under discussion. The reader of this review will be amply repaid for his or her effort in perusing the contents of this excellent annual. The authors and publisher are to be congratulated for making available to the general medical public this splendid summary of modern medicine in the making.

I. L. ROBBINS, M. D.

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Rehabilitation of the Tuberculous: By H. A. Pattison, M. D., F. A. C. P., Livingston, N. Y. The Livingston Press, 1943. Pp. 186. Price, $2.50.

In the war against tuberculosis almost all of those engaged have been at such close quarters with the enemy that they have had to employ all of their forces and material toward the immediate objectives of saving lives and preventing the spread of that disease. Only a few men have had the vision and the opportunity to drive toward a more distant objective, the restoration of the tuberculous to economic independence through graded work and education. In this country, Dr. Pattison is the outstanding authority in this field of rehabilitation. Twenty-six years of research, writing, administration, and actual medical care of patients have established his position and have now produced this book. Appropriately enough, it is printed by the rehabilitation patients at the Potts Memorial Institute of which Dr. Pattison is the Director and is published by their Livingston Press. The format is itself testimony to the training they have received.

This brief, but thorough review of the whole subject of rehabilitation for the tuberculous is written for both medical and lay workers. Medical terms, wherever used, are defined. The background, theoretical basis, and various methods are discussed in Part 1, with illustrative cases. The problems of fatigue in relation to activation and relapse, the mental aspects of tuberculosis, and the variations in human constitution involved are analyzed. An excellent short chapter is devoted to the question of marriage.

The second part of the study is devoted to an account of the development and methods of eighteen rehabilitation centers and some state programs. These centers are in this country, England, Ireland, Holland, Switzerland, and India. This section is illustrated with photographs of some of these experimental forerunners of the next great phase of the campaign against tuberculosis. Excellent bibliographies are appended

to each section of the book. All of those interested in the care of the tuberculous and in its future should read this book and have it at hand for reference.

J. L. WILSON, M. D.

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Autonomic Regulations: Their Significance for Physiology, Psychology and Neuropsychiatry: By Ernst Gellhorn, M. D., Ph. D. New York, Interscience Publishers, Inc., 1943. Pp. 373. Price, $5.50.

This monograph concerns itself primarily with the interrelations of the autonomic nervous system and the other organ systems of the body and is based largely on investigations performed in the author's laboratory for a number of years. It is a detailed review and analysis of the influence of the autonomic system on the various organ systems and, in turn, the effects of these organs on the autonomic system. The various chapters include a discussion of the relationship between hormones and the autonomic nervous system and of the autonomic basis of emotions. Emphasis is placed on the fact that autonomic centers differ fundamentally from the somatic centers, inasmuch as changes in the internal environment, which lead to a depression of the cerebrospinal system, are accompanied by an increased excitability of the vegetative centers. Physiologic and pathologic evidence is presented to further the point of view that the autonomic nervous system should be regarded not only as an efferent system carrying impulses from the somatic system to various visceral organs but also as an afferent system whose impulses significantly alter the excitability of the somatic system.

A considerable part of the monograph is devoted to the discussion of the autonomic reactions to an excess of carbon dioxide in the blood, anoxia, asphyxia, hypoglycemia, and hemorrhage and the demonstration that these emergency conditions cause not only a general discharge of the sympathetic-adrenal system but of the vago-insulin system as well. Experiments are cited showing that this is true for the action of various drugs which stimulate autonomic centers.

The latter part of the monograph is devoted to clinical results and applications. The autonomic adjustment reactions which occur during general and spinal anesthesia are discussed. The author shows how the reactivity of the autonomic centers in schizophrenics is fundamentally different from that of normal individuals and he presents a physiological theory of the treatment of schizophrenia.

The bibliography includes 1100 titles to which reference has been made in the text.

H. S. MAYERSON, Ph. D.

Endoscopic Prostatic Surgery: By Roger W. Barnes, M. S., M. D., F. A. C. S. St. Louis, C. V. Mosby Co., 1943. Pp. 232. Price, $6.00.

Innumerable articles on transurethral prostatic resection have been printed in the current medical journals but this is the first complete text covering the subject in its entirety.

The author has covered the subject from its earliest incipiency to the end results and sequelae in a most orderly and explicit manner. The many pitfalls conducive to complications and unsatisfactory transurethral endoscopic surgery are most clearly elucidated.

Although the author mentions and prefers to use his personal modifications to the Stern-McCarthy resectoscope and a personally devised stool, no egotism is demonstrated, giving the experienced resectoscopist credit for developing his personal preferences.

One reading the text may become confused with the manner in which the terms proximal and distal relating to the instruments are used. The author refers to the ocular end nearest the operator as the proximal end and the cutting or working end as the distal end. These relations are made from the operator and not the patient.

This text should be possessed by every resident in urology who anticipates doing prostatic surgery as well as in the library of all resectoscopists.

MONROE WOLF, M. D.

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A Textbook of Clinical Neurology: With an Introduction to the History of Neurology: By Israel S. Wechsler, M. D. 5th ed. Philadelphia, W. B. Saunders Co., 1943. Pp. 840. Price, $7.50.

During the past few years it has been my pleasure and good fortune to review editions of this famous American textbook of neurology.

Since the appearance of the fourth edition there have been numerous advances in neurology. Chemotherapy of meningitis is practically new; headache is better understood, and electroencephalography, "degenerative" diseases and the autonomic nervous system, have all received considerable further study.

The great value of the section on Injuries of the Brain has long impressed me and I have frequently and successfully made use of it in medico-legal work. It never tires me to read Part V, The Neuroses, and I have made frequent use of this too.

Seldom is the book-buyer offered a one-volume work of such excellence, scope and comprehensiveness and in such a satisfactory format.

The only complaint I have to offer is that, when an edition appears, I develop an uncontrollable urge to purchase it. To me it is the best book on neurology there is.

C. P. MAY, M. D.

Atlas of Ovarian Tumors: By Gemma Barzilai, M. D. New York, Grune & Stratton, 1943. Pp. 261. Price, $10.00.

The book authored by Gemma Barzilai of New York City, is apparently the result of extensive work in medical centers abroad, and is built around a collection of photomicrographs. It is primarily a diagnostic atlas. The book includes photomicrographic plates both in black and white and in color which show the typical histopathology as well as the histopathologic variations of the tumors. No plates of the gross appearance of the tumors are presented.

The classification, though somewhat different, generally conforms to those currently used, being based on the similarity of tumor cells to cells found in the course of embryologic development.

The author briefly summarizes the pertinent data regarding definition, terminology, incidence, gross and microscopic pathology, histogenesis, hormonic activity, if any, clinical course, malignancy and therapy.

Although treatment is not discussed in great detail, the fact that the book is primarily a diagnostic atlas would account for this brevity.

The binding is unique and attractive, but impractical, for the pages are easily torn from the book.

The plates are beautifully reproduced and should be most helpful to both pathologist and clinician.

J. A. CHAMBERLAIN, M. D.

Acute Infections of the Mediastinum: By Harold Neuhof, D. S., F. A. C. S. and Edward E. Jemerin, M. D., D. S., F. A. C. S. Baltimore, Williams and Wilkins Company, 1943. Pp. 407. Price, $6.00.

This work is splendidly done and is an excellent presentation of the subject. Approximately two-thirds of the book is occupied with the presentation of cases which the authors have treated. The cases are grouped according to the type of infection: those secondary to trauma of the esophagus, those secondary to upper respiratory tract infections, those secondary to infection of the lung or pleura, and infections of the mediastinum of miscellaneous etiology. The book is profusely illustrated, and in many instances diagrammatic drawings are used to supplement actual x-ray reproduction. These drawings are of great value. At the end of the group of cases there is an analysis of the cases in that group, which is an excellent resumé of the subject matter. The last part of the book deals with the subject of mediastinal infections from a general standpoint. First the surgical anatomy of the mediastinum is considered and the possibility of extension of the infection. The etiology of mediastinal infections as well as pathogenesis is then discussed in detail. Following this, a chapter is devoted to the clinical manifestations in which the diagnosis and differential diagnosis are adequately considered. The last chapter of the book deals with the treatment and results.

The one criticism which this reviewer has is that in a contribution on the subject of mediastinal infections as valuable as this there are no illustrations of the operative therapy. Although it is realized that this book will be of value to many physicians who are not interested in the surgical technic, it is deplorable that an adequate description of the operative procedure with illustrations is not given in such a treatise.

ALTON OCHSNER, M. D.

Transurethral Prostatectomy: By Reed M. Nesbit, M. D., F. A. C. S. Springfield, Ill., Chas. C. Thomas Co., 1943. Pp. 192. Price, $7.50.

The author does not stress the numerous difficulties the usual resectoscopist encounters. He has modified the working element of the Stern-McCarthy resectoscope so that the instrument may be operated with one hand.

The author apparently has mastered the one hand technic as illustrated by the usual magnificent drawings by William P. Didusch. Probably the last chapter, a rather complete history of transurethral surgery, would be better placed at the beginning of the text.

MONROE WOLF, M. D.

Castor Oil and Quinine; Once a Doctor, Always a Doctor: By George Wonson Vandergrift, M. D. New York, E. P. Sutton, 1942. Pp. 252. Price, $3.00.

Medical biography today has a special appeal for the lay reader as well as the physician. This story of the author's father, during his days of medical education and practice, holds the reader's attention, not only for its details of everyday routine in the life of a busy doctor of the '80s and '90s, but for its human interest. The book will have a particular appeal for those who are familiar with New York City's lower East Side. The author is Adj. Professor of Ophthalmology in the New York Polyclinic Medical School and Hospital.

The book is readable and of pleasing typography. It forms a worth while addition to our collective portrait of medical life in the last century.

MARY LOUISE MARSHALL.

A Manual of Pulmonary Tuberculosis and An Atlas of Thoracic Roentgenology: By David O. N. Lindberg, M. D., F. A. C. P. Springfield, Ill., Charles C. Thomas, 1943. Pp. 219. Price, $6.50.

In the course of the past two decades roentgenology has taken an increasingly important place in the diagnosis, treatment and control of pulmonary tuberculosis. One might truthfully say that the present day attack upon tuberculosis is based upon roentgenologic findings Therefore, it is fitting that a leader in the field of radiology as applied to this problem and a pioneer in some of the

newer technics should write a manual on pulmonary tuberculosis illustrated by an atlas of thoracic roentgenology. The author has accomplished this admirably in a minimum of space.

The manual is essentially practical, being based upon the author's years of experience as director of the Macon County (Ill.) Tuberculosis Sanatorium. No attempt is made to discuss pathology or pathogenesis. While the most recent methods of diagnosis and treatment are included, controversial subjects are omitted. Tables are utilized freely. The illustrations, including gross pulmonary pathology, are numerous and practical. The result is a concise and useful review of modern methods of diagnosis, treatment, and case-finding. The shortcomings of this manual are corollaries of its advantages—extreme brevity and the exclusion of other physicians' experience. There is no bibliography. The atlas is a series of excellent roentgenograms of the chest, very well reproduced. The captions might well have been fuller for the instruction of the novice at interpretation of chest roentgenograms. All stages and forms of pulmonary tuberculosis and other chronic pulmonary conditions are well illustrated. The section on planigraphy is valuable. This little book will be found to be very useful to all who have to deal with pulmonary tuberculosis.

JULIUS LANE WILSON, M. D.

Flying Men and Medicine; The Effects of Flying upon the Human Body: By E. Osmun Barr, M. D. New York, Funk and Wagnalls Co., 1943. Pp. 254. Price, $2.50.

This book was written for the prospective flier. It attempts to present to the layman, in nontechnical language, the medical aspects of aviation which determine whether the individual is suited, physically and mentally, to become an aviator. The author has performed this difficult task only reasonably well.

It is unfortunate still to find reference to the fact that the lungs secrete oxygen, a point of view which has been discarded by most physiologists for lack of evidence. In light of recent work it would seem that more emphasis should have been placed on the part played by the eyes, rather than the labyrinths, in the maintenance of the flyer's equilibrium and orientation. Since the pseudo-isochromatic color plates are now almost universally used for the testing of color blindness, this test should have been described along with the yarn tests for this purpose.

H. S. MAYERSON, M. D.

Clinical Significance of the Blood in Tuberculosis: By Gulli Lindh Muller, M. D. New York, The Commonwealth Fund, 1943. Pp. 536. Price, $3.50.

An extensive and scattered literature has accumulated upon the subject of the changes in the blood in tuberculosis. Widely varied methods of examination are used and recorded in differing ways. The author of this study has analyzed all of these methods and put them to the practical test of use on cases. She also presents her experience in an analysis of almost seven thousand hematologic studies in her laboratory upon patients with tuberculosis. Her examination of this material is sane, critical, and free of the special pleading which so often accompanies the introduction of new methods, or theories. She shows what can be done and what cannot be done by laboratory methods in determining the state of activity of tuberculous lesions and in following the results of treatment. The various methods of determining the sedimentation rate are discussed in detail. The importance of correcting the sedimentation rate for cell volume is emphasized and a new table is provided for that purpose. There is an excellent bibliography and an index. Published by the Commonwealth Fund at a very low price, this book will be found essential in the working library of every clinical pathologist, every tuberculosis sanatorium laboratory, and every hospital laboratory.

JULIUS LANE WILSON, M. D.

PUBLICATIONS RECEIVED

The Blakiston Company, Philadelphia: The Genealogy of Gynaecology, by James V. Ricci, A. B., M. D.

Froben Press, New York: History of Surgery, by R. A. Leonard, M. D.

Grune & Stratton, Inc., New York: Allergy, by Erich Urbach. M. D. and Philip M. Gottlieb, M. D.

Paul B. Hoeber, Inc., New York: Memoir of Walter Reed, by Albert E. Truby, Brigadier General, U. S. A., Retired.

Lea & Febiger, Philadelphia: Clinical Parasitology, by Charles Franklin Craig, M. C., M. A. (Hon.), F. A. C. S., F. A. C. P., Col., U. S. A., Retired, D. S. M. and Ernest Carroll Faust, M. A., Ph. D. Roentgenographic Technique, by Darmon Artelle Rhinehart, A. M., M. D., F. A. C. R.

Philosophical Library, Inc., New York: Rehabilitation of the War Injured, edited by William Brown Doherty, M. D. and Dagobert D. Runes, Ph. D.

Quarterly Review of Obstetrics and Gynecology, Washington, D. C.: Quarterly Review of Obstetrics and Gynecology, Vol. 1, No. 1.

W. B. Saunders Company, Philadelphia: Manual of Fractures, by C. M. Shaar, M. D., F. A. C. S., Captain, M. C., U. S. N. and Frank P. Kreuz, Jr., M. D., F. A. C. S., Lt. Comdr., M. C., U. S. N. Geriatric Medicine, edited by Edward J. Stieglitz, M. S., M. D., F. A. C. P. Gastro-Enterology, Vol. 1, The Esophagus and Stomach, by Henry L. Bockus, M. D.